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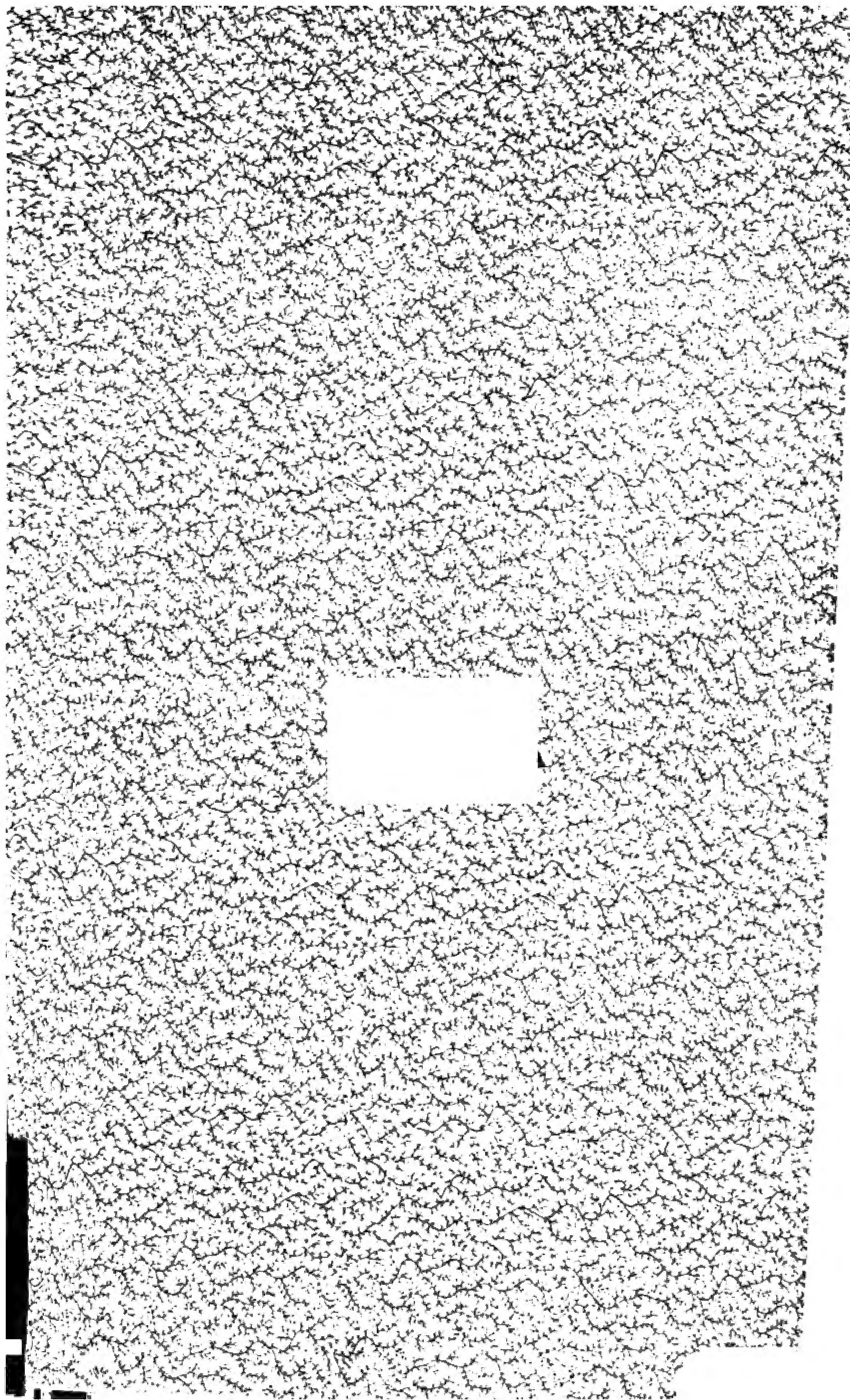
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SIE

THE
INSURANCE CYCLOPÆDIA:

BEING

A DICTIONARY

OF THE DEFINITION OF TERMS USED IN CONNEXION WITH THE THEORY
AND PRACTICE OF INSURANCE IN ALL ITS BRANCHES:

A BIOGRAPHICAL SUMMARY

OF THE LIVES OF ALL THOSE WHO HAVE CONTRIBUTED TO THE
DEVELOPMENT AND IMPROVEMENT OF THE THEORY AND PRACTICE
OF INSURANCE: WHETHER AS AUTHOR, MANAGER, ACTUARY,
SECRETARY, AGENCY SUPERINTENDENT, OR OTHERWISE:

A BIBLIOGRAPHICAL REPERTORY

OF ALL WORKS WRITTEN UPON THE SUBJECT OF INSURANCE AND ITS
ASSOCIATED SCIENCES:

AN HISTORICAL TREASURY

OF EVENTS AND CIRCUMSTANCES CONNECTED WITH THE ORIGIN AND
PROGRESS OF INSURANCE, INCLUDING A HISTORY OF ALL KNOWN
OFFICES OF INSURANCE FOUNDED IN GREAT BRITAIN,
FROM THE BEGINNING.

AND ALSO CONTAINING A DETAILED

ACCOUNT OF THE RISE AND PROGRESS OF INSURANCE
IN EUROPE AND IN AMERICA.

BY

CORNELIUS WALFORD, F.I.A., F.S.S.,

BARRISTER-AT-LAW;

AUTHOR OF "INSURANCE GUIDE AND HAND-BOOK," "INSURANCE YEAR-BOOK," ETC. ETC.

VOLUME I.

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**J. H. & C. M. GOODSSELL, 156 & 8, BROADWAY;
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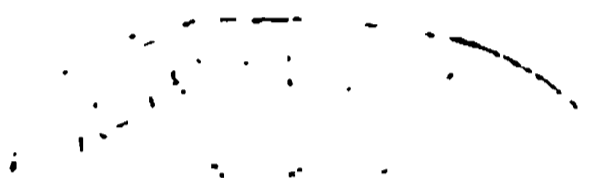
1871. p

The
Cyclopedia

2 of 10

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M.D. AEA



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LONDON:
PRINTED BY CHARLES AND EDWIN LAYTON,
FLEET STREET AND GOUGH SQUARE.

TO THE
PRESIDENT, COUNCIL, FELLOWS AND ASSOCIATES
OF THE
INSTITUTE OF ACTUARIES
OF GREAT BRITAIN AND IRELAND;

AND TO THE
PRESIDENT, COUNCIL, FELLOWS AND ASSOCIATES
OF THE
FACULTY OF ACTUARIES
IN SCOTLAND;

I RESPECTFULLY DEDICATE THIS WORK
IN THE HOPE AND BELIEF

THAT ITS CONTENTS WILL BE FOUND OF SUCH INTEREST AND VALUE

AS TO ENTITLE IT

NOT ONLY TO THEIR RECOGNITION, BUT TO THEIR PERMANENT REGARD,

AS THE PRODUCTION OF AN EARNEST FELLOW-LABOURER

IN THE FIELD OF ENTERPRISE

TO WHICH THEIR LABOURS AND THEIR LIVES ARE DEVOTED.

THE AUTHOR.

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*[Entered according to Act of Congress, in the year 1871, by J. H. & C. M. GOODSSELL,
in the Clerk's Office in the District Court of the United States for the Southern
District of New York.]*

AUTHOR'S PREFACE.

SOME five years since I announced the present work as "in course of preparation." If I could have foreseen that every leisure moment from that hour to the present would have been required in its completion, I should never have ventured upon that first announcement.

In the course of my investigations for a former work, which has found most extended favour,* I discovered that there remained unwritten the Great History of the Origin and Development of the various phases and branches of Insurance in this country. It became my ambition to grapple with the work. I present herewith the first instalment of my labours. It (the entire work) has cost me many sacrifices—pecuniary, social, personal health. I shall find content in any small rewards that flow from it.

I cannot tell how far the work may even be welcomed in a popular sense here—the depressed state of our Insurance interests I confess causes me some misgivings. But I have one abiding consolation; and that is, that every page of it will receive a hearty welcome on the other side of the Atlantic. There, it is an axiom of the business, that Knowledge is power;—and in that spirit every word written, either upon the former history or present practice of INSURANCE, finds in the great body of Insurance officials, agents, and canvassers, countless thousands of readers. I must own (and without intending the smallest disrespect to Insurance interests here) that the recognition of this fact has had a sustaining influence upon me: it has often flashed across me during the dreary hours of the night, imparting a ray of hope to the heart, and renewed power to the pen.

Regarding the work itself—it must speak for itself. Faults will be found in it, and they will be proclaimed: I need not anticipate them. I shall endeavour to avail myself of all rational criticism in the final preparation of the future numbers.

It is, perhaps, desirable that I should state that the design of the book has undergone some change. It was my first intention to write a series of essays explanatory of the different branches of Insurance, including an account of their origin. In such a plan much must of necessity have been omitted; and my individual views must have influenced the relation of that which was presented. I therefore changed my plan, and resolved to present to my readers the blocks of solid material, even in their crude authenticity,

* *The Insurance Guide and Hand-book*, which has passed through three considerable editions; and which may be regarded in the light of an introduction to the present work.

just as by hard and constant digging they were brought to light. Am I right? I await with anxiety, and yet with hope, the award.

The usefulness of the publication I venture to think will consist quite as much in the details of what has passed away as of what still exists.

Some few explanations seem necessary. They can all be aptly made in the language of writers who have travelled over portions of the same road.

The late PROFESSOR DE MORGAN—who was pleased to take a most lively interest in the progress of these pages, and I most sincerely wish he had survived their advent—says in the introduction to *Arithmetical Books* (1847):—

The most worthless book of a bygone day is a record worthy of preservation. Like a telescopic star, its obscurity may render it unavailable for most purposes; but it serves, in hands which know how to use it, to determine the places of more important bodies.

The late venerable CHARLES BABBAGE—one of the earliest writers on Life Insurance in a popular form—said in his *Comparative View* (1826):—

If the reader should think that I have been too sparing of praise, too ready to criticize, let him consider that my object has been to collect and arrange information for his use; and that my criticisms may not be without value even to the Institutions that gave rise to them.

MR. WM. THOMAS THOMSON, of Edinburgh, whom I have to thank for the warm interest he has shown in this undertaking, says in the learned article on Life Insurance in the last edition of the *Encyclopædia Britannica*:—

In the historical part of the subject, generally a certain amount of plagiarism must be conceded, and of that kind too which does not admit of direct acknowledgment.

The late JOHN HOOPER HARTNOLL, than whom a more sagacious and conscientious journalist never lived—and who, I may add, also took the deepest interest in the progress of these pages—said, some years since, in answer to a correspondent who asked for information concerning some six or eight Insurance offices:—

Will our correspondent be so good as to reflect upon the time it would take to furnish such an account even of one office as would serve to guide a stranger in determining upon the propriety of becoming agent for it—and then further reflect upon the labour of giving the like information respecting eight different companies, all possessing different points of merit or demerit—and he will be able to form a notion of the task he is desirous of imposing upon us.

Mr. J. A. FOWLER, author of the *Pennsylvania Insurance Handbook* (1860)—a work well worthy of finding readers on this side—says therein:—

To indite the history of a great financial agency, which, as it permeates through the social system, touches a hundred points at once, like the many-armed son of Coelus, while no annalist has heretofore kept legible the course of the record, is a task whose difficulty can be appreciated only by those who have assayed such a labour.

I shall have thanks to offer to several friends for assistance rendered in the past, and to come. This pleasant task must be deferred till the completion of the work.

CORNELIUS WALFORD.

ENFIELD HOUSE, BELSIZE PARK GARDENS,
London, N.W., Oct. 1871.

EXPLANATION TO THE READER.

The design of this work is that it shall be, as far as possible, self-interpreting. All technical terms used in its pages are explained in its pages, in their alphabetical order.

The arrangement of subjects is strictly *Alphabetical*.

The arrangement of articles is, as far as possible, *Chronological*. Dates are given whenever possible. Writers on Insurance subjects generally, have a great disregard for chronological exactitude.

Words in Small Capitals placed in brackets, as [USURY], mean that the subject will be further treated of under that head.

When Small Capitals are used in the text without the brackets, it signifies that the subject is, or will be, treated of as a separate article.

Offices founded in London, or books published there, are not individually so designated in the following pages. The rule we have followed is to state all the exceptions. Therefore where it is not specifically stated *otherwise*, London is to be assumed.

We are especially desirous of noticing all INSURANCE PAMPHLETS. Many of these are privately printed, or only accessible through their authors. Our thanks will be due for any contributions of this description.

A Table of the principal Abbreviations used in the work is given on the next page.

TABLE OF ABBREVIATIONS USED IN THIS WORK ;

MANY OF WHICH ARE SPECIALLY ADAPTED TO ITS PAGES :—

A.	Accident Insurance	L.	Life, Life Insurance
Act.	Actuary	L.J.	Lord Justice
Act of Parl.	Act of Parliament	Lim.	Limited
Add.	Addition, additional	Liq.	Liquidator, liquidation, liquidated
Adv.	Advertisement	Lond.	London
Amalg.	Amalgamation	M.	Marine, Marine Insurance
Ann.	Annual, annum	Mag.	Magazine
Ann. rep.	Annual report	Man.	Manager
Annu.	Annuities, annuity	Mar. Ins.	Marriage Insurance
Ap.	Apprenticeship Insurance	Mort.	Mortality
Art. of Asso.	Articles of Association	Mort. obs.	Mortality observation
Art. of Sett.	Articles of Settlement	Mut.	Mutual
Assu.	Assure, assured, assurance, assurances	N.Y.	New York
<i>Assu. Mag.</i>	<i>Assurance Magazine</i>	Non-par.	Non-participating
Asso.	Association	Obs.	Observations
B.	Birth Insurance	Off. Liq.	Official liquidator
B. of mort.	Bill of mortality	Off. Man.	Official manager
Bal.	Balance	Ordin.	Ordinance
Bon.	Bonus, Bonuses	Orig.	Original
Brit.	Britain, British, Britannia	P.a.	Per annum
Bus.	Business	P.c.	Per cent.
C.	Christening Insurance	Pamp.	Pamphlet
C.	Cent.	Para.	Paragraph
C.p.c.	Cent. per cent.	Parl.	Parliament
Cap.	Capital	Parl. Com.	Parliamentary Committee
Chap.	Chapter	Parti.	Participation
Co. Cos.	Company, Companies	Phil. Trans.	Philosophical Transactions
Comp. regis.	Complete registration	Pol.	Policy, policies
Con. act.	Consulting actuary	Pop.	Population
Consti.	Constitution	Prelim.	Preliminary
Contin.	Contingencies	Prem.	Premium, premiums
Corp.	Corporation	Prob.	Probability, probabilities
D. of Sett.	Deed of Settlement	Prosp.	Prospectus
Div.	Dividend, dividends, division	Prov. regis.	Provisional registration
Dol.	Dollar	Pub.	Published, publisher, publication
Ed.	Edition, editor	R.	Report
Eds.	Editions	Red. prem.	Reduction of premium
Edin.	Edinburgh	Reg.-Gen.	Registrar-General
Ency. Brit.	Encyclopædia Britannica	Regis.	Registration
Endow.	Endowment, endowments	Rep.	Report
E. and W.	England and Wales	Rev.	Reversion
Estab.	Established, establishment	S.	Service Insurance
Exp.	Experience	Sec.	Secretary
F.	Fire, Fire Insurance	So.	Society
F. So.	Friendly Society	Stat.	Statute
Fid.	Fidelity guarantee	Stg.	Sterling
Fr.	France	Subs.	Subscribed, subscribers, subscription
G.	Guarantee, Guarantee Insurance	T.	Table
Gl.	Glass Insurance	Trans.	Transfer, transferred, translation
Gov.	Government	U.K.	United Kingdom
Gt. Brit.	Great Britain	U.S.	United States
H.	Hail Insurance	V.C.	Vice-Chancellor
Hist.	History	V. Sta.	Vital statistics
Incorp.	Incorporation	Vict.	Victoria
Ins.	Insure, insured, insurance, insurances		
Inst.	Institution, institutions		
Int.	Interest		
Intro.	Introduction		

THE ENCYCLOPÆDIA OF INSURANCE.

ABA

ABACUS.—An ancient instrument used for facilitating numerical calculations.

ABACUS: ENGLISH AND SCOTTISH EQUITABLE ASSO. “for the effecting of Mut. and the granting of Guaranteed Assu. on lives and survivorships.” The Asso. was projected some 20 years since (we cannot determine the precise date), and we quote from the preliminary prosp. then issued. The Cap. was to be £500,000 in 25,000 shares of £20. “It is proposed that boards of direction, empowered to grant policies, shall be constituted at Lond. Edin. Glasgow, and other places.” The Asso. was intended to embrace the following branches of business:—1. Mut. assu. 2. The granting of “Guaranteed assu.” with parti. in profits. 3. The same without parti. The Asso. was to possess “the most complete and varied set of Tables hitherto pub. ;” and “to prevent any mistake as to what may be the *value* of a policy, the value which each will have acquired at the end of any completed year of its duration will be endorsed on every policy issued by the Asso. The schedule of values will be cancelled, and a new and a higher Table endorsed on those policies which have attained higher values in consequence of any additions which may have been made to the sum assu. by way of bonus, or of any diminution of future prems.” The prospectus was one of the most carefully prepared we have ever met with. We have noted its really original features. The promoters indeed appear to have expended all their force on it. The project advanced no further. We believe Mr. Edward Ryley prepared the Tables, which were original and elaborate.

ABANDONEE, one to whom anything is abandoned: as an underwriter to whom a ship is abandoned.

ABANDONMENT in Marine Ins. is the relinquishment by the insured to the insurer of his right to what is saved out of a wreck, when the thing insured has, by some of the usual perils of the sea, become practically valueless. Upon abandonment the insured is entitled to call upon the insurers to pay the full amount of the Ins., as in the case of a total loss. The loss is in such case called a “Constructive total loss.” The damage to a *cargo* must exceed half its value to entitle the insured to abandon, and recover as for a total loss; and to justify the abandonment of the *ship* the particular injuries must be such that no repairs would render her seaworthy for the remainder of the voyage, or that the cost of making her seaworthy would exceed her value when repaired. The insured must give notice of his intention to abandon, and claim as for total loss to the underwriters, or their agents, within a “reasonable time” after he has received intelligence of the casualty, otherwise it will be taken that he intends to claim for a partial loss only. Abandonment very frequently takes place in cases of capture; the loss is then total, and no question can arise in respect of it. *Where, however, a ship and cargo are re-captured within such a time that the object of the voyage is not lost, the insured is not entitled to abandon.* The mere stranding of a ship is not deemed of itself such a loss as will justify an abandonment. If by some fortunate accident, by the exertions of the crew, or by borrowed assistance, the ship can be got off and rendered capable of continuing her voyage, the insurers are only liable for the expenses occasioned by the stranding. It is only where the stranding is followed by *shipwreck*, or the ship is in any other way rendered incapable of prosecuting her voyage, that the insured can abandon.

The subject is of great importance, as abandonment is of very frequent occurrence in Marine Ins. It is very ably handled by *Arnould, Marshall, Park*, and in the *Law Lexicon*.

This right of abandonment by the Insured to the Insurer is held not to be applicable to the contract of *Fire Ins.* An attempt was made to enforce its adoption a few years since. The arguments on the subject are given in Bunyon's *Law of Fire Ins.* p. 104-5.

ABATEMENT.—Abatements for prompt payment or otherwise from the original cost of goods as charged in bills of parcels and invoices, as also allowances, discounts, drawback, etc., at the Custom-house, are often very considerable, and ought to be inquired into, and deductions made accordingly in calculating the true value of the interest insured, and in stating an average loss; which otherwise may on some occasions be adjusted very erroneously.—*Weskett*.

ABATEMENT OF PREMIUM.—The profits of Life Offices are sometimes said to be applied in Abatement of prem. We prefer to speak of it as Reduction of prem.

ABBOTT, CHARLES (LORD TENTERDEN), pub. in Lond. in 1802: A Treatise of the Law relative to Merchant Ships and Seamen. This work bears a high character, and is frequently cited upon questions of Commercial Law. It has passed through many eds. in England and America. One of the latest in England was 1856—10th ed. by Mr. Serj. Shee. We shall quote from it in the course of these pages. Lord Eldon termed this “an excellent work.”

ABERAYRON MARINE INS. ASSO. This Asso. was regis. in 1864, being “Limited by Guarantee” under the provisions of the Cos. Act of 1862. It may be regarded as an Ins. Club.

ABERDEEN ASSU. CO. founded in the city whose name it bears in 1825, for F. and L. Ins. Its authorized cap. was £1,000,000 in 20,000 shares of £50. The Co. has been solid and well managed from the beginning. Its business was for many years very small, and chiefly confined to the North of Scotland. In 1852 the Co. obtained an act of Incorp., on which occasion it took power to change its name, and did change it to the *Scottish Provincial*, under which title we shall furnish a more complete hist.

ABERDEEN FIRE INS. ASSO. This Asso. was founded late in the past or early in the present century. It returned duty in 1805 to the amount of £970 14s. 4d.; but we cannot trace its subsequent hist. That it had passed out of existence before 1825 may be fairly assumed by the founding of the office last named.

ABERDEEN MARINE INS. CO.—Founded in Aberdeen in 1839. It continued in business up to 1848, when it passed into Liq.

ABERDEEN MUTUAL AND FRIENDLY INS. SO.—Founded in Aberdeen in 1831, for the purpose of carrying on the business of *Health, Life and Fire* Ins. Mr. Alex. Yeates was its Act. and Sec. We cannot trace its later hist.

ABERYSTWITH MUT. SHIP. INS. SO. was projected at Aberystwith in 1853, for the purposes of Mut. Marine Ins. Whether now in existence we cannot ascertain.

ABODE, habitation, or place of residence. In law it is used in different senses, to denote the place of a man's residence or business, temporary or permanent. “Abode” seems larger and looser in its import than the word “residence,” which in strictness means where a man lives, *i.e.*, where he sleeps, or is at home.—*Law Lex.*

ABORTIVE INS. ASSO.—By these must be understood Ins. Asso. which having been completely estab. in a legal sense, have either failed to do business, or have not done sufficient to maintain a separate existence. They have mostly, therefore, died out at a very early date. Some have trans. any bus. obtained to another Co., others have passed into Liq. We shall give a list of Abortive Asso. in Tables to be appended to this work. In a mortality Table of Ins. Offices they would rank as having died within the first year after birth. This would give them an average duration of six months.

ABORTIVES.—See STILL-BORN CHILDREN.

ABOUT, MONS. EDMOND, pub. in Paris a few years since *L'Assurance*, 2nd ed. 1866. He has also contributed an interesting series of articles on Life Ins. to some of the French newspapers.

ABBREVIATION, an abridging or contracting. A Table of the Abbreviations used in this work is given on the page preceding letter A. The 4 Geo. II. c. 26 (1731), provided that all law proceedings in the English language should be written legibly, and in words at length, and not abbreviated. Those who have occasion to consult old Acts of Parl. and records will appreciate the value of this rule. The 6 Geo. II. c. 14 (1733), permitted numbers to be expressed in figures.

ABROAD, RESIDENCE.—See FOREIGN RESIDENCE.

ABSENCE.—The question not unfrequently arises in Ins. practice whether a person who has left his usual place of residence for some years, and has not been heard of, may be presumed to be alive or dead. As early as 1714, Nicolas Bernoulli applied the science of prob. to the solution of the question of the time after which an absent person may be reputed as dead. Our law now holds that where a person has not been heard of for seven years, he is presumed to be dead. [DEATH, PROOF OF.]

ABSOLUTE ASSIGNMENT.—See ASSIGNMENT.

ABSOLUTE AND CONTINGENT REVERSIONARY INTEREST AND INVESTMENT CO., LIM.—A Co. under this title was projected in Lond. in 1862. It went no further.

ABSOLUTE LIFE ASSU. SO., founded in 1856, with an authorized Cap. of £100,000 in 20,000 shares of £5; mixed; profits every 5 years. “Policies are so framed as to render the amount assu. certain and absolute.” Diseased lives and acclimatized lives were ins. “All-world policies” issued. “Assu. are granted payable in the event of *loss of Life by fire*; also to emigrants and others payable in the event of loss of Life by shipwreck during any voyage at sea, including a provision for payment of reward to persons saving the lives

of the holders." "The payment of monies assu. by policies in other assu. offices will be guaranteed on payment of a very small amount, either ann. or otherwise, thereby rendering such policies absolute." Mr. T. H. Cooper was Act. and Sec. In 1857 bus. was trans. to *City of Lond.*, and in 1859 went over with last-named Co. to *Eagle*.

ABSOLUTE REVERSIONARY AND ANNUITY CO.—A project under this title was regis. in 1860 by Mr. Tobiah Pepper, but it did not advance far beyond the title.

ABSOLUTE SECURITY LIFE ASSU. INST.—A Co. under this title was projected in 1849 by Mr. Edward Morton, shorthand writer; but no step was taken beyond prov. regis.

ABSOLUTE SECURITY LIFE AND FIRE INS. CO., founded in Lond. in 1852, and died during the same year. The promoter was Mr. G. R. H. Dension, of whom we shall give some account hereafter. The Cap. was said to be £100,000 in 50,000 shares of £2—deposit 10s. per share. The chief office was at 32, Gt. Coram St., Russell Sq., and there were branch offices at Newport, Mons., and Birmingham. The names of the Directors were used without the sanction of the parties; and, indeed, the whole thing was either a bubble or a swindle. We do not find that it was even prov. regis.; although a scheme with the same title had been so regis. in 1849.

ABSOLUTE SECURITY LIFE POLICIES.—A Life policy to be absolutely secure in the hands of its holder must have at least three essentials: it must be unforfeitable, unconditional, and unchallengeable. "When it is issued on these conditions, and acquires in proportion to the number of prems. paid a certain fixed value, either rev. or immediate, the amount of which can always be known by a mere inspection of the Tables printed upon it, it becomes a negotiable security of the highest order."—*Ins. Record*. It wants one other condition, at least of equal importance with any yet named: It must be issued by an office thoroughly sound and unimpeachable. All these conditions being granted, there are many who doubt the propriety of such policies on account of "moral hazard." We do not propose to discuss that aspect of the question here.

In 1869 the *Prudential* announced a scheme of "Absolute Security Assu.," which is still in force. It is a modification of the "Ten prem. plan."

ABSOLUTE TOTAL LOSS.—An *absolute* total loss takes place when the subject ins. wholly perishes, or its recovery is rendered irretrievably hopeless, as for example, when a vessel founders at sea, or is captured, and condemned as a prize.—*Arnould; McArthur*.

ABSTINENCE.—The influence of abstinence on the duration of life will come before us in a variety of forms, more particularly when we treat of LONGEVITY. It will be convenient to state here, that in these pages we shall not only treat of all the known causes which produce or accelerate DEATH; but we shall also mention all known or supposed causes of an opposite tendency. We shall notice only a few of the recorded cases ancient or modern of remarkable abstinence. *Pliny* said: A man may live seven or even eleven days without meat or drink. St. Anthony lived to the age of 105, on 12 oz. of bread daily. James the Hermit lived in the same manner to the age of 104. St. Epithanius lived thus to 115. Simeon the Stylite to 112; and Kentigern, commonly called St. Mungo, lived by similar means to 185.—*Spottiswood*. [FASTING.] [TEMPERANCE.]

ABSTRACT OF ACTUARIAL REPORT.—The Life Assu. Cos. Act, 1870, requires a return under this head to be made. See ACTUARIAL REPORT.

ABSTRACT OF TITLE. An epitome of the evidence of ownership.

ACCEPTANCE.—The letter or other similar document agreeing to accept a proposal for a Life Assurance is technically styled an "Acceptance." It is customary to include in this certain stipulations, such as, for instance, that the risk is not undertaken until payment of the premium; that any material change affecting the health of the life occurring in the interval between the issue of the acceptance and the payment of premium is to be notified; that after a limited number of days a fresh medical report may be demanded.—*Ins. Agent*.

ACCIDENT.—This word occurs in various ways in connexion with the business of Ins.; its meaning is defined by several leading authorities as follows:—Casualty; unforeseen event.—*Johnson*. That which falls, or happens, or occurs to.—*Richardson*. Chance; an unessential quality or property.—*Chambers*. An event that takes place without one's foresight or expectation; an event that proceeds from an unknown cause, or is an unusual effect of a known cause, and therefore not expected; chance, casualty, contingency.—*Webster*. Accident excludes the idea of design.—*Worcester*. An extraordinary incident; something not expected.—*Law Dict.* In Valin's famous *Commentary* we find the following:

Insurers are responsible only for such damages as happen through casual or unavoidable accidents; or from voluntary acts which have a just and reasonable cause, such as to avoid greater and more imminent danger; and in general for all accidents however extraordinary, if there be no restriction by an express clause. But an accident is not that which happens through the defects or perishable nature of the thing insured, or through the act or fault of the proprietor, freighter, or master.

A modern writer of considerable authority says:—*The foundation of claims on underwriters is accident*. The damage which the vessel sustains must be something extra to the ordinary events, to the ordinary waste and decay which all shipping is subject to.—*Hopkins' Handbook of Average*. These remarks were applied to Marine Ins. only, but the principle which is embodied is easily discoverable, and should be extended to other branches of Ins.

In the Act of Anne (1707) for "the better preventing mischief that may happen by Fire," while servants are fined severely for occasioning fires through negligence, it is provided

(sec. 6) that no action shall be prosecuted against any person in whose house or chamber any fire *accidentally* begins, nor should any recompense be made by such person for any damage suffered or occasioned thereby. The same principle is incorporated in our more modern law upon the subject.

By the *Code Napoléon* (sec. 1733), the lessee of a house is answerable for a fire, unless he can prove that the same happened by *accident*, or causes beyond his control.

In Accident Ins. it is of the very essence of the contract that the cause of injury be purely *accidental*, and that such injuries alone be recognized as are the direct result of the accident. [NEGLIGENCE.]

ACCIDENT OR NEGLIGENCE, DEATHS FROM.—These rank in the Reg.-Gen. classification as Order 1, of the class of VIOLENT DEATHS, and embrace Fractures and Contusions, Gunshot Injuries, Cuts and Stabs, Burns and Scalds, Poison, Drowning, Suffocation, and otherwise, making in all eight enumerated forms, each of which will be again spoken of under its proper head.

The deaths from Accidental Violence are far more numerous than those not acquainted with the subject would imagine. It is only since the General Registration Act came into operation (1837) that we have been enabled to obtain even an approximate idea of their extent. The first return was for the year 1838, when the deaths under this head in E. and W. were 11,727, of which 8,359 of those killed were males, and 3,368 females. In 1839 the total deaths were 11,632 in about the like proportions. In 1840, 11,594; in 1841, 11,100; in 1842, 11,092. We then have no return until 1847, when they had increased to 12,917. Since that date the returns have been made regularly, and are as follows:—

Deaths in England and Wales from Accidental Violence annually from 1848, distinguishing the sexes :

	Totals.	Males.	Females.		Totals.	Males.	Females.
1848	12,630 ...	9,219 ...	3,411	1859	13,056 ...	9,655 ...	3,401
1849	12,255 ...	8,957 ...	3,298	1860	13,023 ...	9,462 ...	3,561
1850	12,991 ...	9,378 ...	3,613	1861	13,307 ...	9,987 ...	3,320
1851	12,492 ...	9,161 ...	3,331	1862	13,192 ...	9,742 ...	3,450
1852	13,432 ...	9,827 ...	3,605	1863	13,941 ...	10,404 ...	3,537
1853	13,605 ...	9,969 ...	3,636	1864	15,245 ...	11,331 ...	3,914
1854	13,900 ...	10,212 ...	3,688	1865	15,533 ...	11,806 ...	3,727
1855	13,834 ...	10,073 ...	3,761	1866	15,094 ...	11,465 ...	3,629
1856	13,783 ...	10,206 ...	3,577	1867	15,147 ...	11,446 ...	3,701
1857	13,816 ...	10,315 ...	3,501	1868	14,989 ...	11,437 ...	3,552
1858	12,523 ...	9,182 ...	3,341	1869	14,614 ...	11,087 ...	3,527

These results present a wonderful uniformity, and indeed establish the fact that the law of average obtains as fully in this class of deaths as in those resulting from what are usually termed natural causes. It will be observed, however, that the increase, which has been very great during the last five years, is chiefly in the males. The females have fluctuated very little during the period under observation.

An analysis of the deaths by Accidental Violence in 1840 furnished the following details:—Out of 7,152 males 3,268 were under 20, and 3,884 above. Out of 2,828 females 1,996 were under 20, and 832 above. Lancashire and Cheshire presented the highest totals for both males and females. In those counties united the death-rate from this cause was, for males 1,098, for females 459 to one million living. In Lond. alone no less than 1,016 persons were killed that year, of whom 711 were males, and 305 females. The deaths from accidents were, therefore, for males 821, and females 310 to one million living. The causes of death were thus classified: Mechanical injuries 3,305, Chemical injuries 3,245, Drowning, etc., 2,297.

The Reg.-Gen., in his 6th R. (1842), thus drew attention to this subject :

The violent deaths in England appear to be nearly twice as frequent as in other countries of Europe from which returns have been procured. . . . The coroners' informations, although not made at present on a uniform plan, furnish many valuable facts, and when compared with the occupations and other circumstances recorded in the registers, or ascertained at the census, become doubly interesting. . . . it is very desirable that in all cases in which inquests are held the coroners should instruct the juries to state in their verdicts with greater minuteness than at present the cause of death; recording more in detail the nature of the injury, and the circumstances in which the death happened.

In his 19th R. (1856) there is a most careful analysis of the deaths of this class for the five years 1852-56. The total deaths in that period were 68,554, of which 50,287 occurred to males, and 18,267 to females. 20,786 deaths were occasioned by mechanical injuries, 19,131 by suffocation in various forms, including drowning, 15,226 arose from chemical injuries, 5,328 from violence in forms not particularized; 4,927 arose from coal mines, and 756 from other mines. The remaining 2,400 arose from railways. The annual average from these several causes was: Mechanical injuries, 4,157; Drowning, etc., 3,826; Chemical injuries, 3,045; Violence, 1,065; Coal mines, 985; other mines, 151; Railways, 480.

In Dr. Farr's letter to the Reg.-Gen., in the same R., the following details are given regarding the year 1856. The mort. from violent causes was nearly 8 in 10,000 living, and nearly 4 in 100 deaths were by violence; 2,919 deaths were from burns and scalds;

2,681 were from drowning ; and the deaths at sea were not included in the registers ; 5,433 deaths were from fractures and contusions. He says :

The progress of science has created new forces often fatal, and has produced new substances, of which our forefathers had no knowledge. Machinery is organized on a large scale, so that the lives of numbers of men are liable to be destroyed, not by malicious intent, but by the negligence of other men who have their lives in charge.

He adds : “ 1,107 persons are killed annually by horses and horse conveyances ; ”—more than double the number killed by railways.

In the *Assu. Mag.* for 1860 (Vol. 9) will be found an able paper by Mr. H. W. Porter, B.A., *On some considerations suggested by the Ann. R. of the Reg.-Gen.*, in which the frightful accidents happening in Factories are reviewed, and some very sensible suggestions made for their remedy.

Over a period of 15 years ending 1864, the deaths from accidents and negligence averaged 691 per million of the pop. living ; ranging from 649 in 1858 to 733 in 1865.

The deaths in 1867 were thus divided : Males 11,446, Females 3701. Of the males 791 met with their deaths under one year of age, and 2069 under 5 ; 753 between 5 and 10 ; 870 between 10 and 15 ; 946 between 15 and 20 ; 949 between 20 and 25 ; 1501 between 25 and 35 ; 1347 between 35 and 45 ; 1083 between 45 and 55 ; 858 between 55 and 65 ; 569 between 65 and 75 ; 231 between 75 and 85 ; 47 between 85 and 95, and 1 above 95. Of the Females, 715 met with their deaths under one year, and 1566 under five years ; 372 between 5 and 10 ; 153 between 10 and 15 ; 118 between 15 and 20 ; 84 between 20 and 25 ; 140 between 25 and 35 ; 154 between 35 and 45 ; 190 between 45 and 55 ; 198 between 55 and 65 ; 259 between 65 and 75 ; 288 between 75 and 85 ; 98 between 85 and 95, and 4 over 95.

Mons. A. Legoyt, the head of the General Statistical Department of France, and secretary of the Statistical So. of Paris, has recently (1865) drawn to a conclusion some researches relative to “ Accidents in Europe and the United States,” a *résumé* of which can scarcely fail to be of interest. We purpose, therefore, to lay before our readers the more important inferences which may be deduced from M. Legoyt’s labours, availing ourselves of the services of a writer in the *Lancet*, who has travelled over the same ground.

The questions with which the French statistician has busied himself are—1st, the ratio of accidents to the population ; 2nd, their ratio to the general mortality of each sex ; and 3rd, their ratio as regards the female population, the male standard being taken at 100, in the different countries which enter into the comparison here made. From some of the numbers given we find that the proportion of fatal accidents to the population varies between the maxima of 682, 679, and 575 to a million of inhabitants in England, Norway, and the United States, and the co-efficient minima of 201, 202, and 232 of Russia, Spain, and Denmark.

It is evident from such variable proportions that the determining causes of fatal accidents must be of very complex nature, and cannot be explained simply by what may be called the economic character of different countries. In fact, if the predominance of manufacturing and mining industry justifies the exceptional rate of fatal accidents in England, and to a certain extent in the United States, it surely cannot do so as regards Norway, the Duchy of Oldenburg, and Sweden. On the other hand, we should miss with surprise Belgium and Saxony, two of the chief industrial States of Europe, from amongst the countries with a high rate of mortality from fatal accidents, if a great development of manufacturing industry were the chief cause of such mortality. We must, therefore, fall back upon the existence of special local causes dependent on the manners, customs, and configuration of the country, perils of navigation, fishing, and modes of transport, neglect of children, or actual exposure of them to dangers of various kinds, etc.

There would not appear to be any absolute relation between the ratio of deaths from accidents and the population, and between such ratio and the total number of deaths. Herein exists two classes of facts, indeed essentially distinct from each other. A relatively large number of accidents need have but a slight influence in the production of the causes of general mortality. The proportion of such accidents amongst women to 100 amongst men oscillates between one-fourth and one-third. It would appear to be quite exceptional in the United States (46 per 100). In our own country the proportion is relatively high ; and here a great number of female hands participate in the production of our industry. M. Legoyt has been able to compare only a small number of countries, in reference to the immediate causes or nature of accidents.

With the exception of England, where “ burns and scalds,” and of the United States, where contusions and injuries (classified under “ crushing and bruising”), occupy the first place amongst accidents, “ submersion” is the cause of the greatest number of deaths. Next come falls from an elevation ; then burns, crushings, and asphyxia. Amongst the Scandinavian countries the large number of “ congelations” is not to be wondered at ; but there must evidently be some error as regards Spain in this particular. So also, whilst we are not surprised to find that “ alcoholic excesses” play an important part in Russia and Sweden, we are struck by their insignificance in England, Denmark, and the United States ; some fallacy, we suspect, likewise lurks here. It is with respect to “ burns” that the ratio of fatal accidents rises higher amongst women than amongst men.

M. Legoyt’s researches tend to show that accidental deaths nearly everywhere increase more rapidly than does the population. In France, for example, the following successive

and increasing ratio has taken place:—15 fatal accidents to 100,000 inhabitants from 1827 to 1830; 16 ditto from 1831 to 1835; 19 ditto from 1836 to 1840; 22 ditto from 1841 to 1845; 24 ditto from 1846 to 1850; 25 ditto from 1851 to 1855; and 28 ditto from 1856 to 1860. No doubt some of this increase is due to the more exact character of recent enumerations; still, the continuously progressive rate which is here seen indicates a sure though lamentable onward movement.

Children appear to constitute a high proportion of the victims of fatal accidents. In Bavaria the latter form a very large part of the causes of mortality of childhood and adolescence, from birth to 20 years of age, and within this range the maximum is attained between the time of birth and five years. Submersion is the more frequent cause—particularly as regards male children—of the fatal event. Burns and poisoning are frequent in tender years; but strangely enough, children are less frequently victims in towns than in country districts.

The ratio of females to males as regards accidents tends to increase, probably with the participation of the former in industrial occupations. In Bavaria and in Saxony the ratio is highest during early infancy, and in the former State lowest between 40 and 50 years of age. At every age it attains its maximum through “burns,” which in Bavaria are more common during summer than in winter. Women more frequently succumb to burns, suffocation by fire, submersion, and poisoning.

M. Legoyt found fatal accidents to be of much more frequent occurrence in summer than during the other three seasons of the year, and considered this probably due to the fact of the former season being the chief one for out-door operations, navigation, etc.

In England it is found that the extremes of heat and cold are productive of non-fatal injuries. The statistics of non-fatal injuries do not properly arise here. We shall refer to them under ACCIDENT INS.

Where death or personal injury results from negligence as distinguished from accident, the person or persons occasioning the same are liable to damages under Lord Campbell's Act, of which we shall speak fully under INJURIES (personal) and NEGLIGENCE.

We propose now to glance at the mort. of Insured life arising from accidents:—

In the *Equitable* during a period of 32 years, 1801-32, out of 4,095 deaths, 40 (or about 1 in every 100) were from accidents. In 7 cases the ages were under 30 years; 11 between 40 and 50; 9 between 50 and 60; 4 between 60 and 70; 5 between 70 and 80; and 4 over 80.

In the *Scottish Widows*, out of 1,398 deaths in 7 years ending 1866, there were but 40 included under the class Violent deaths, of which, no doubt, the greater proportion would be from accident.

In the *Scottish Equitable*, out of 1,855 deaths in 33 years ending 1864, there were 70 included under head of Violent deaths; but as no details are given it is impossible to say the precise proportion from accidents.

In the *Scottish Amicable*, out of 773 deaths occurring during a period of 34 years, 1826-60, 25 are returned as arising from accidental injuries, and 10 from drowning in addition—thus there are 35 deaths from accident, or nearly 5 p.c.

In the *Gresham*, out of 1,000 deaths occurring in a period of 18 years, 12 are returned as from accidents, and 14 from drowning—making in all 26, or more than 2½ p.c. of the entire deaths.

In the *Briton*, out of 1,165 deaths in 5 years, 31 are returned as from accidents, in add. to 19 from drowning—being very nearly from the combined causes 5 p.c. of the deaths!

Life may sometimes be saved by a prompt and judicious treatment in cases of accident and emergency even before medical aid can arrive. The *Accident Ins. Co.*, fully alive to this fact, distribute to its agents and pol.-holders a sheet of directions accompanied by diagrams showing how to proceed in many of the most frequent cases of injury. This sheet was prepared by Alfred Smee, Esq., F.R.S.

There are several other publications having a similar aim, viz:

Hand-book for Emergencies, pub. by Cassell, Petter, and Galpin (1861).

First Help in Accidents, prepared by Dr. C. H. Schaible, M.D., and pub. by Hardwick (1864). [RAILWAY ACCIDENTS.] [VIOLENT DEATHS.]

ACCIDENT INS., HIST. OF.—This branch of Ins., when spoken of by previous writers, has generally been classed under the comprehensive designation of “Casualty Ins.” It is still so called in the U.S. At the best Accident Ins. can constitute but one department of casualty business. We think the time has arrived when it should be placed under its distinctive title of ACCIDENT INS.

Accident Ins. in its present form represents one of the most popular adaptations of the principle of ins. to the requirements of every-day life. It meets a recognized want. It gives to the professional and better classes a means of protection from the pecuniary and other consequences of disablement, in a purely business form. What Friendly Societies do for the industrial classes, Accident Ins. does for the higher classes. The cost of Accident Ins. may be said to be within the reach of every one for whom it is especially intended.

It has been truly said “there are hundreds of thousands who cannot afford to be run

over ; to whom a lingering illness would be misery, and whose death would scatter or starve their families. A serious or severe accident would probably deprive a clerk of his situation, and a small tradesman of his business, leaving them no home but the hospital, and no hope but the grave." But the advantages of Accident Ins. are too palpable to need argument. The neglect of it too frequent to escape notice !

The prosp. of one of the existing Accident Cos. puts the matter in a very business-like shape :—

The same arguments which have induced the public to insure so largely against damage to property by *Fire*—to ships by the perils of the *Sea*—and to secure a fund payable on the ordinary termination of *Life*—are exactly applicable to Ins. against expenses and loss of income consequent on an *Accident*, and to secure a fund in case of death happening by some extraordinary casualty. *It is not meant that the mere fact of receiving injury should entitle the Assured to Compensation.* To pretend to pay for pain of mind or body would be absurd. The allowance for injury is intended to be paid when it is sufficiently serious to prevent the Assured from following his usual occupation or pursuits, and to serve as an indemnity for the loss thereby incurred.

It is generally considered that the business of Accident Ins. is of very modern origin, and, indeed, in its present form it dates no further back than 1848. But there are many early indications of the idea and intention of Accident Ins. which demand a passing notice.

In the ancient Sea-Laws of Wisby, under date 1541, mention is made of the practice of the owners of ships insuring the lives of the masters against the *perils of the sea*. The passage in which this allusion occurs is believed not to be part of the original code of Wisby, or indeed it would demand an earlier date ; but it is admitted that it must have been interpolated about the date named ; and it is therefore the first mention we have of any species of Ins. falling within the scope of Accident Ins.

In 1661 M. Cleirac brings under notice a French pub. called *Le Guidon*, said to have been orig. compiled "for the benefit of the merchants trading in the noble city of Rouen." This work is believed to be more than 300 years old ; and it contains an account of various descriptions of Ins. as then practised, some of which are very remarkable. That most nearly resembling modern Accident Ins. is as follows :—"Another kind of Ins. is made by other nations, upon the life of men, in case of their decease upon their voyage, to pay certain sums to their heirs or creditors."

We have next a more direct example of the embodiment of the principle of non-fatal Accident Ins., but applied to the casualties of warfare. In 1665 England declared war against the United Netherlands. The Republic issued a proclamation announcing the amount of recompense which would be awarded to soldiers wounded in the service of their country, as follows :—

For loss of both eyes, 1,500 livres = £62 10s.	For loss of right hand, 350 livres = £ 14 12s.
„ one eye, 350 „ = 14 12	„ left hand, 300 „ = 12 10
„ both arms, 1,500 „ = 62 10	„ both legs, 700 „ = 29 4
„ right arm, 450 „ = 18 15	„ one leg, 350 „ = 14 12
„ left arm, 350 „ = 14 12	„ both feet, 450 „ = 18 15
„ both hands, 1,200 „ = 50 0	„ one foot, 200 „ = 8 7

And other arrangements were made for those suffering from less definite injuries.

It appears from a R. made to the Lords of the Treasury in 1694, on the petition of Capt. Betsworth, of the Fusileers, who had lost his leg in battle, that it had been the custom to allow to a soldier *a year's pay* for the loss of a limb. This would not have been a very high assessment considering the small pay of the army at that date.

Injuries incurred in actual warfare do not come within the ordinary scope of Accident Ins. ; but they have within recent times been specially insured against both in England and America. The similarity of the preceding Table to one now actually in use, and to which we shall have occasion presently more particularly to refer, is very remarkable.

The system of Accident Ins., as now practised, may be said in some measure to owe its origin to the development of Railway travelling—although the ins. against Railway accidents forms but a very unimportant part of the business of Accident Ins. However, with 1845—memorable in the hist. of Railway enterprise—our record begins. The following is an accurate list of this especial class of ins. projects in that and several subsequent years :—

- 1845. Railway British and Foreign L. and Property Ins. Co.
- 1845. Railway, Steam Vessel, L. and Casualty Co.
- 1845. Railway Guarantee Co.
- 1847. Railway Casualty Compensation Co.
- 1847. Railway L. Co.
- 1847. Railway L. and Accident.
- 1847. Railway L. Assurance, Accident, Trust and Provident So.
- 1848. Railway Provident Mutual L.
- 1848. United Railway Casualty Co.
- 1848. Railway Passengers Assu. Co.
- 1848. Railway Assu. Co.
- 1849. Accidental Death Indemnity Asso.
- 1850. Accidental Injury and Death Co.

Out of this list of projected Cos. only two became completely founded. The *Railway Passengers Co.* was prov. regis. on the 15th Dec., 1848; and on the following day (16th Dec.) the *Railway Assu. Co.* was prov. regis.

The *Railway Passengers* became comp. regis. on 22nd March, 1849. Its operations extended only to insuring against Railway accidents, fatal and non-fatal. The prem. charged to people of the first class was £1 p.a. to insure £1,000 at death, with proportionate compensation for non-fatal injury. The Co. defined a Railway accident to be an accident happening to a train whilst in motion—a definition admitting of some doubt, as many trains have been run into by other trains while themselves standing still at Railway Stations, junctions, etc.; and the Co. always paid in such cases. The strict definition of a Railway injury is, perhaps, *an accident happening to a passenger whilst travelling in a Railway Train, in conformity with the Railway Co.'s By-laws.*

On the 24th January, 1850, the *Accidental Death Ins. Co.*, which had been projected in the previous year under the title of the *Accidental Death Indemnity Asso.*, was completely regis. The original object of the promoters had been simply to insure against *fatal accidents from all causes*, or such accidents as terminated fatally within three months after their occurrence. But almost before business operations had been commenced, the then Actuary of the Co., Mr. Edward Riley, suggested to the Board the desirability of giving the operations of the Co. a wider range, viz., insuring “compensation for bodily injury occurring to any person or persons from any accidental or violent cause or causes not occasioning death” This recommendation was adopted by the proprietors on June 3, 1850; and from that day dates the modern system of Accident Ins.

The original prosp. of the Co. contained the following, and it is impossible to put the arguments in fewer words:—

The numerous casualties to which the life of man is liable are subjects of daily occurrence and observation,—there is scarcely an individual who cannot refer within the sphere of his own family or acquaintance to instances of sudden or accidental death; and few who cannot look back to their own providential escape from imminent danger. To guard against the consequences of such a calamity, whether happening in the pursuit of business or of pleasure, is the duty of every one, and this Co. will afford to all, according to their circumstances, the means of obtaining so desirable an object.

The difficulties of obtaining reliable data on which to base the rates of prem. were great, but were overcome. The rates for persons not exposed to any special risk from occupation were fixed as follows:—To cover *death* by accident £1 p.a. for £1000. To cover *death and compensation* for non-fatal injury £3 10s. p.a. securing £1000 at death, and £5 per week during entire disablement, with a sum not exceeding £10 for medical attendance during the injury. For persons of hazardous occupations there were special rates; as also for loss of leg or arm, or total loss of sight. For Railway Accidents only the prem. was 10s. p.a. for £1000 at death and £5 per week compensation during disablement.

The scheme of allowing medical expenses was based upon the theory that every one injured should have good medical attendance, and the Co. would provide some compensation for the medical man. It was thought that efficient medical supervision would lead to speedy recovery from the injury sustained. The practice too often worked the other way. In cases of slight injury, the medical men would keep the patients on the funds of the Co. until the allowance for medical expenses became exhausted: thus too often the Co. had to pay the claimant £5 per week, while the doctor was working up his bill to the £10 limit. After a few years trial, the scheme of medical expenses came to be abandoned; and the allowance to the insured increased to £6 per week under a £1000 policy—the insured paying his own medical attendant.

Among the early Directors of this pioneer Co. in the business of ins. against “accidents from all causes,” were several gentlemen who believed that the great masses of workmen in the manufacturing districts would be among the first to avail themselves of the scheme. Never was a greater misapprehension. Deputations were formed; meetings were held; but no practical result followed. Again and again the attempt was made; but with unvarying non-success. The present writer may claim the credit of pointing out to these disappointed gentlemen that the real field for their enterprise lay with the professional and mercantile classes. The new experiment was inaugurated during the year 1852. Its success was very speedily proclaimed. We may put on record here as a matter of history, and as indicative of the tardy growth of this now great branch of Ins. enterprise, the income of this Co. during the first nine years of its existence, viz.:—

1850	£1228	1853	£10,752	1856	£21,762
1851	£2668	1854	£15,103	1857	£25,530
1852	£6326	1855	£18,059	1858	£33,260

On the 16th July, 1850, the *Railway Assu. Co.* (prov. regis. in 1848) became completely registered, and commenced business. Its scheme was to charge a *single premium* of £2 2s. for the whole of life to cover the risk of being killed while travelling by Railway. This Co. did not limit its ins. in the same manner as the *Railway Passengers Co.*; but its pol. covered accidents and injuries incident to Railway travelling;—such as stepping from the train to the platform, being run against by the Luggage barrows, and other incidental risks.

The prem. was very much too low for the risk undertaken, and the Co. only maintained its independent existence for about two years.

In 1851 the *Maritime Passengers Ins. Co.* was projected, for the purpose of affording facilities of Ins. to those whose occupations required them to travel by sea, analogous to those afforded to persons who travelled by land. The Co. also afforded facilities of Ins. to Captains and Mariners, both for Accident Ins. and L. Ins.

We may state here that the individual hist. of each of the preceding and following offices will be given under the name of the Co. All we contemplate here is a hist. of the origin and development of ACCIDENT INS.

In 1852 the *Marine L. and Casualty Co.* was founded, chiefly with the view of ins. the lives of seafaring persons at moderate rates of prem. We shall notice this Co. again under MARINERS' LIVES.

In 1854 the *Travellers and Marine Ins. Co.* was founded under influential auspices. Its object was to grant pol. combining both land and sea risks. This was accomplished by "Whole World Tourists Pol.," granted at the rate of £1 10s. p.c. p.a. For General accident pol. the Co. charged only £2 p. £1,000; but this rate excluded the risks of "Horse accidents" and "Machinery accidents" from the pol. For these risks they charged £1 p. £1,000, which brought the rate up to £3. Great practical difficulty arose in reference to the exclusion of Horse accidents. Persons readily ins. at the lower rate, but if they met with an injury from riding or driving always expected to be paid—asserting by way of extenuation that it was not their practice to run such risks—failing to see that it was their inexperience which too frequently occasioned the injury. This Co. plays a prominent part in the future hist. of Accident Ins. It soon afterwards, under the authority of a special Act of Parl., became *Accidental Death Co.* (No. 2).

In the same year (1854) the *Marine and General Travellers Ins. Co.* was formed. It was an obvious parody upon the preceding Co. It had no new features, except that its rates were absurdly low, and marked its failure from the beginning.

During this year the Crimean war broke out, and the *Accidental Death Co.* caused a series of calculations to be made with a view to Ins. the L. of officers against death in battle. A considerable business was transacted; but the unusual mort. among officers during that war absorbed the profit the office would otherwise have made by the venture.

In 1855 the *General Accident and Compensation Co.* was founded. It intro. the feature of granting the weekly compensation without any sum at death; and also that of "Family Insurance." Thus a family consisting of parents and not more than eight children under 21, might ins. to receive £1000 in case of death of any one of them by paying £18 p.a. The rates for ordinary accident business were absurdly low.

In the same year (1855) the *Railway Passengers Co.*, which had previously, as its name implies, confined its business to ins. against accidents arising from travelling on Railways, took up the General Accident branch. Instead of allowing any special and distinct sum for medical attendance, it increased the weekly compensation to £6, charging to persons of non-hazardous occupations £3 p.a. This was an improvement in principle, although it is very doubtful whether the increase of the weekly compensation has not increased the tendency to fraud.

In 1856 the *Norwich and Lond. Accident and Plate-Glass Ins. Co.* was founded. Regarding Accident Ins., it offered no especially new features. It prudently placed the weekly compensation at £5 in respect of a £1000 Ins., and charged a prem. of £2 5s. *excluding* hunting, shooting, steam engine and machinery risks. Including these, the rate to persons of non-hazardous occupations was £3 p.a. for £1000 at death, and £5 per week during non-fatal disability from accident.

In the same year the *National Alliance Life Co.* was founded, having an Accident branch. It embodied no new features, but fell into the error of unduly low rates.

The year 1857 marks a somewhat important era in the hist. of accident Ins. The business was new, and its managers had not then learned to fence it round with those precautionary restrictions which later experience has shown to be so necessary. In a word, it was peculiarly open to imposition and fraud; and a marked combination of cases bearing evidence of such tendency presented themselves. It was in that year that a son, under pretext of a run-away horse, drove his aged father into a deep river at a point where there was no prospect of help at hand. But the father clung to the son, and both were drowned. Both were heavily insured—the father but a few weeks previously had been the inmate of a union-workhouse! In the same year, a large miller and maltster ins. under two designations through two different agents of the same Co. with each for £2000, and very shortly afterwards was found dead in his own mill-stream! It was in that year that a well-known stock-broker placed on his dressing room table two little bottles precisely the same in appearance: one containing medicine necessary for his ailment; the other poison. In the morning the man was found dead in bed: the poison bottle was empty. Some £14,000 was at stake upon these, and some other cases occurring about the same time. The Directors of the *Accidental Death Co.*, upon whom these claims came—the orig. and leading Co. in the business—grew out of heart, and resolved to relinquish the enterprise. The business was trans. to the *Travellers and Marine*, upon terms which secured the orig. shareholders from loss—and henceforth

conditions were introduced into the policies, and regulations adopted in the conduct of the bus. to prevent such wholesale plunder.

This transfer took place in September, 1857. At that juncture the present writer, in concert with the late Professor de Morgan, made a very complete investigation into the past experience of accident Ins. business. It was found that for many occupations the rates theretofore charged were too low—and *some occupations could not be ins. at any rates, with the prospect of profit to the office.* In all about 700 occupations were embraced in the investigation. They were ultimately reduced into four classes, as follows :—

Class I. included professional gentlemen and others incurring no liability to accident by reason of their occupation.

Class II. included Master Tradesmen, and others, who although concerned in constructive occupations, *took no personal part therein.* In this class the distinction between masters and workmen arose : a master tailor, for instance, is a different risk from a workman : a slight injury to the hand might entirely disable the workman ; while the master sustaining a similar injury could yet superintend his business. The same as to a master builder, distinct from a working bricklayer, carpenter, mason, etc.

Class III. included risks arising from constructive operations, and applies to the mechanical and operative classes generally.

Class IV. applies to still more hazardous occupations, where great personal danger is involved in the calling.

There was indeed a 5th class—those who should not be insured at all. With this class the “moral bazar” of the bus. lay.

The rates of prem. were revised and adapted to the first four classes. It may be said that the great secret of the business lies in the adoption of such a classification—or more technically speaking, in excluding certain occupations from the class to which they do not rightfully belong. The rates are only adapted to and remunerative for each class, so long as the classification is maintained.

Since this period there has not been so much competition—that is, so much undercutting in the rates. They have become nearly uniform. Each Co. can regulate its classification by its own experience.

In 1863, the *Friend-in-Need* commenced the business of Accident Ins., pirating rates, conditions of Ins. and everything it had in connexion therewith, from other offices, and very speedily, as was to be expected, bringing loss and annoyance upon all concerned.

In 1863 also the business of Accident Ins. was intro. into the U.S. by Mr. Batterson, the founder and president of the *Travellers* Ins. Co. of Hartford, a Co. which has grown into the most gigantic proportions, and has been conducted with marked success. In four years it issued 130,000 policies. It has had a host of imitators, but we believe it, and the *Railway Passengers* Co., which sprang out of it, are the two sole survivors. The *Travellers* Co. originated and carries on the business of Life and Accident Ins. combined.

In this year also the *National Union Life and Limb* Ins. Co., was incorp. by special charter of the legislature of the State of New York, with a capital of 100,000 dols., for the purpose of making ins. upon the lives and limbs and health of the soldiers, sailors, and marines in the army and navy of the U.S. of America. We do not know with what pecuniary result the bus. was conducted. In the following year it extended its bus. so as to grant Ins. to the general public.

In 1865 the *Accidental and Marine* Ins. Corp. was founded, ostensibly for the bus. of Marine Ins., but some of its Directors being at the time of its conception also Directors of the *Accidental Death* Co. (No. 2), a fusion of interests took place. The step was thoroughly unwise. There is no sort of analogy between the two branches. Events speedily demonstrated this ; and in the following year the accident portion of the bus. was resumed by its former Directors : they, however, became unwilling to retain it, in consequence of certain complications arising out of the preceding events, and handed it over to another Co.

In 1865 also the *Birmingham Alliance L.* Co. was founded, and commenced the bus. of Accident Ins. Its classification was defective ; especially having regard to the locality of its operations. It did not long continue the Accident branch.

In the same year (1865) the *International L.* Ins. Co. commenced the bus. of Accident Ins., and continued it on a limited scale till about July, 1868, when that branch was trans. to the *Imperial Union*. Its classification was extremely defective.

It was we believe in this year also that an Accident Ins. Co. was founded in Australia, by a gentleman who went from here ostensibly to found a branch for an English Co. The experiment of a local office did not succeed : it was said because there was not sufficient scope to obtain an average of risks. The English office contemplating a branch there may be regarded as having had a most fortunate escape.

In 1866 the *Accident* Ins. Co. was founded. It took over the bus. of the *Accidental Death* Co. (No. 2). Its officers were among those who had aided in working up the bus. of the orig. *Accidental Death* Co., and under their auspices the present Co. speedily assumed a leading position. The risks were very carefully gone over and a large amount of bus. rejected, to the infinite advantage of the shareholders.

This Co. in addition to carrying on its orig. bus. has organized a system of Ins. known

as the "Specific Compensation Class." The advantage claimed for this plan over the ordinary system of Accident Ins. is that the amount of compensation for any particular injury is fixed from the time of taking out the policy. Here is the scale in relation to a £1000 policy—that is, if the ins. desire to protect his family to the extent of £1000 in case of his death by accident, he protects *himself* by becoming entitled to the following scale of compensation in respect of any of the non-fatal injuries enumerated; with a general allowance in case of being entirely disabled by any accidental injury not included in this schedule.

£100 total loss of an eye.	£25 compound fracture of any bones of the hands or fingers.
250 " " both eyes.	20 fracture of ribs.
100 " " an arm.	60 " " pelvis.
250 " " both arms.	60 " " patella.
50 " " a hand.	60 " " thigh.
25 " " one or more fingers.	80 compound fracture of thigh.
100 " " a leg.	50 fracture of leg.
250 " " both legs.	70 compound ditto.
100 " " a foot.	30 fracture of any bones of foot or toes.
50 " " one or more toes.	50 compound ditto.
100 fracture of the skull.	10 dislocation of shoulder.
50 " " lower jaw.	15 " elbow.
30 " " clavicle.	15 " wrist.
50 compound ditto " "	10 " fingers.
50 fracture of the scapula.	20 " hip.
50 " " upper arm.	20 " patella.
65 compound ditto.	15 " any bone of foot or toe.
40 fracture of the fore arm.	10 " lower jaw.
50 compound ditto.	
20 fracture of any bones of the hands or fingers.	

NOTE.—£1 for every day (except Sundays) beyond a week up to 100 days, whilst confined to bed by order of any duly registered practitioner, for injuries not included in the above table.

Now one of the most remarkable features about this scheme is its wonderful resemblance to that of 1665. We are, however, in a position to affirm that the existence of the first was not known when the second was compiled. The scheme was devised with a view to lessen some of the defects which attach to the bus. under the ordinary method. If this plan of insuring were adopted generally by the accident offices, a very large proportion of the fraudulent claims they now sustain would be at once got rid of.

In the same year (1866) the *Imperial Union* Ins. Co. was founded, having an Accident Ins. branch. It made no prominent feature of the bus. until it took over the accident branch of the *International Life* in 1868.

About this period the bus. of accident Ins. was introduced, by special desire of the Emperor Napoleon, into France. The plan there adopted was that of collective Ins.—the insuring bodies of workmen *en masse*. The Co. undertaking the bus. was the *Sécurité Générale*. Its two first balance sheets showed, as was to be expected, very serious losses.

In Germany a small accident bus. has been carried on by the *Thuringia* Co., but the bus. has never been thoroughly taken up there.

In 1867 the *Colonial Assu. Corp.* was founded, and it inaugurated here, and still carries on with success, the system of *Life and Accident Ins. combined*: a plan of ins. possessing so many advantages, that it is destined sooner or later to occupy a more prominent position. The add. to the life rate is very small; the advantages to the insured very considerable.

In 1868 the *General Accident and Guarantee* Co. was founded. Its special feature was the charging a reduced rate—that is, placing in a more favourable classification Architects, Building Surveyors, and Civil Engineers, as compared with other Accident offices. The Co. was one of great respectability; and in 1870 it became united with the *Accident* Co. The founders of this Co. originated the idea of allocating some portion of the profits to the pol.-holders, as in L. Ins.

In the same year the *Home* Ins. Asso. was founded; and it was one of its features to grant collective Ins. against accidents to bodies of workmen: a class of bus. which all former experience had shown to be most undesirable in the light of realizing any profit.

In 1869 was founded the *London Guarantee and Accident* Co. There was no very special feature in its accident branch, except that its classification was very liberal to the insured. This, of course, can and will be remedied by future experience.

In the same year there was founded the *Sovereign Accident* Co. The scheme of this office—which was but an off-shoot of the *General Accident and Guarantee*—was that of granting as much benefit to each class of persons ins. as £1 (this is *one sovereign*) would pay for, viz., £300 in case of death, and £2 p. week in case of non-fatal injury.

In 1870 were founded several Accident Ins. offices, viz., 1. *City Accident* Co., which

immediately on its birth became associated with the *Accident Co.* (No. 1) and the *General Accident Co.*, constituting that happy *tria junta in uno*—the *Accident Ins. Co.* (No. 2).

2. The *Commercial Accident Co.*, which announces a very special feature, viz., That the profits will be ascertained at the end of every year, “and a bon. equivalent to one half the net profit (after deduction for reserve fund) allowed on the prem. for the ensuing year upon all pol. that have not been claimed upon during the year.” We think every 3 or 5 years would have been quite often enough to ascertain and distribute the profits on a small accident bus.

3. The *Carriage Accident Co.*—This we shall speak of specially under its own head. In Fr. both horses and carriages are ins. against accident; and the bus. appears a most legitimate one: due precaution being taken against imposition.

We have now, we believe for the first time, traced the hist. of ACCIDENT INS. To have given more details would have occupied too much space. The subject will again present itself not only in the histories of the individual offices, but in reference to the Ins. of Mariners' lives, war risks, etc.

In the practical working of this bus., there are difficulties to be encountered which do not present themselves in most other branches of Ins. In Life Ins. the claimant must be proved to be dead before a claim is paid; and in reference to fatal accidents, of course the same rule prevails. In Fire Ins. there must have been a fire, and there must therefore be some visible evidence of loss. In reference to non-fatal injuries, frequently no such means of proof are at hand. In the case of broken limbs there is direct evidence. In the case of scalds and burns, it is well known *that they have been personally inflicted for the sake of creating claims.* In the case of sprains and invisible injuries, whether the claimant can't work or won't work, remains occasionally a mystery. The practical experience of a well-trained staff, and above all a sagacious, able, experienced medical adviser, are of the first essentials in the conduct of so special a business.

It may be said that about 1 out of every 12 persons insured makes a claim; and that to every fatal claim, there are at least 100 non-fatal injuries. Somewhere about the same proportions obtain in the U.S.

In the course of twenty years experience, many points of practice have become settled; some of them through the medium of the law courts; although there has been surprisingly little litigation when the nature of the bus. is considered. It has, for instance, been decided by the Courts that *Sunstroke* is not a cause of death within the scope of Accident Ins. This was decided in the case of *Sinclair v. Maritime Passengers Co.* That a person ins. under a non-hazardous, but intending immediately afterwards to assume a hazardous occupation, would be guilty of fraud (Bunyon). That notice of death must be given to the Co. within the time stipulated in the policy. This was settled in *Gamble v. Accident Co.* before the Irish Courts in 1869. That *Erysipelas* following a slight injury is not a direct consequence of the accident, and therefore not covered by an accident policy. This was decided in the Exchequer Chamber in the case of *Smith v. Accident Co.* in 1870. And that death from inherent disease, although accelerated by accident, is not within the meaning of an Accident Ins. This was decided in the case of *Cross v. Railway Passengers Co.* before Baron Bramwell and a special jury in July, 1871.

ACCIDENT INS. : Stamp duties on pol. When the *Accidental Death Co.* was about to commence bus. in 1850, its officers applied to the Stamp Office authorities to know what stamp should be affixed to the pol. The reply was: “Same as on life pol.” This was simply absurd. On a £1,000 pol. against Railway accidents, for which the Co. charged 10s. prem., the stamp duty would be £3. The result was that for several years the Co. issued unstamped pol., with the full knowledge of the stamp authorities. Duty has since been levied as follows:

1853. By 16 & 17 Vict. c. 59—6d. for every £50 ins. where the whole sum does not exceed £500; 1s. for each £100 where sum ins. did not exceed £1,000; and 10s. p. £1,000 or part thereof beyond. Thus a £1,000 pol. required a 10s. stamp.

1860. By 23 & 24 Vict. c. 111, a special scale of stamps was imposed upon Accident, Plate Glass, Hail Ins., etc. pol. as follows: Where prem. did not exceed 2s. 6d., stamp 1d.; exceeding 2s. 6d. and not exceeding 5s., stamp 3d.; and 3d. add. for each 5s. or fractional part thereof. This was a very great improvement.

1865. By 28 & 29 Vict. c. 96, this scale was re-enacted.

1870. By 33 & 34 Vict. c. 97, “for any payment agreed to be made upon the death of any person, only from accident, or violence, or otherwise than from a natural cause, or as compensation for personal injury,” etc., the stamp on the pol. was reduced to one penny.

ACCIDENT INS. Co. LIM. (No. 1).—This Co. was founded in 1866, with an authorized cap. of £50,000, in shares of £2. It was formed to take over the business of the *Accidental Death Co.* (No. 2), and rapidly rose to a successful position. In 1867 it took over the Accident bus. of the *Birmingham Alliance Life*, which was small, but respectable. In 1868 it organized a system of *Specific Compensation Ins.*, which we have spoken of in our HIST. OF ACCIDENT INS. In 1870 it was reorganized, and became *Accident Ins. Co.* (No. 2), which see. In rather more than three years, the shareholders received back in dividends and bonuses more than the entire paid-up capital of the Co.

ACCIDENT INS. CO. LIM. (No. 2).—This Co. was founded in 1870, with an authorized cap. of £50,000, in shares of £1. It is in fact a reorganization of *Accident Co. (No. 1)*, consequent on its union with the *General Accident and Guarantee Co.* and the *City Accident Co.* Its bus. is sound, and its progress in every way satisfactory. It took over such of the policies of the several offices united with *Accidental Death Co. (No. 2)* as remained in force at that date. Policy-holders are entitled to participate in the profits on the following plan : a red. of prem. at the end of five years on all policies under which the ins. shall have made no claim during that period, "such reduction to be consistent with the surplus profit of the Co. made at the end of every quinquennial period dating from 1st January, 1870."

ACCIDENT RECORD.—A circular or newspaper under this title was pub. quarterly by the *Accident Ins. Co.* during the years 1868-9, and excited a good deal of interest. It was circulated chiefly among the agents of the Co.

ACCIDENTAL DEATH INDEMNITY INS. CO.—A Co. under this title was projected in 1849, Mr. George Sands Sidney being the promoter. Its objects were fully accomplished by the *Accidental Death Co.* projected the same year.

ACCIDENTAL DEATH INS. CO. (No. 1), founded in Lond. in 1850, with an authorized cap. of £100,000, in shares of £20. It had been prov. regis. in 1849, under the title of the *Accidental Death Indemnity Asso.* ; but on the 24th Jan. 1850, took the title by which it afterwards became so widely known. Its first scheme was to insure against death from all accidental causes ; but in a few months it matured a system of insuring against non-fatal injuries arising from accidents, and so it became the founder of the modern bus. of *Accident Ins.* We have given some details of this period under head of **ACCIDENT INS., HIST. OF.**

In 1852 the Co. took over the business of the *Railway Assu. Co.* which had been regis. as early as 1848 ; and the arrangement was carried out under the authority of a special Act of Parl., 15 & 16 Vict. c. lvi., "An Act for amal. *Railway Ins. Co.* with *Accidental Death Co.*, and enabling the amalgamated Co. to insure against death or other personal injury." Hence the Co. obtained parliamentary powers at a very early date.

The progress of the bus. was during the first few years very slow, but that turned out to be mainly in consequence of the Co. having addressed itself to the manufacturing and industrious classes instead of to the professional and mercantile classes. After a few years the mistake was remedied, and the bus. progressed in a satisfactory manner until misfortune of another class overtook it, and it became the victim to a series of frauds already spoken of in the general Hist. of *Accident Ins.*

The result was that the Directors grew alarmed, and in 1857 entered into an agreement to trans. the bus. to the *Travellers and Marine Ins. Co.*, which had been founded in 1854. This arrangement was sanctioned by Parl. 22 Vict. c. xxii. See *Travellers and Marine.* The shareholders received back all their capital, with a bonus of 25 p.c. ; and with this satisfactory result the affairs of the pioneer *Accident Ins. Co.* were closed.

The special act of 1859, 22 Vict. c. xxii., was intituled : "Act for dissolving the *Accidental Death Co.*, and trans. the business to the *Travellers and Marine Ins. Co.*, to be thereafter called the *Accidental Death Ins. Co.*"

ACCIDENTAL DEATH INS. CO. (No. 2).—This Co. was founded in Lond. in 1854, under the title of the *Travellers and Marine Ins. Co.*, with an authorized cap. of £100,000 (afterwards increased to £250,000), in shares of £5. It introduced some modifications into the bus. of *Accident Ins.* which we have noted in our general hist. In 1857 the *Travellers* took over the bus. of the *Accidental Death (No. 1)* ; and in 1859 obtained the authority of a special act, 22 Vict. c. xxii. : "An Act for dissolving the *Accidental Death Co. (No. 1)*, and trans. the bus. to the *Travellers and Marine*, to be thereafter called the *Accidental Death Ins. Co.*" The fact was, the Directors had discovered the mistake of discontinuing the original name, and had to go to Parl. to get the necessary authority to resume it. Hence the title of *Accidental Death Co. (No. 2)*.

The Co. between 1857 and 1859 had absorbed the businesses of the following offices :
Maritime Passengers founded 1851 *General Accident Compensation* founded 1855
Marine and General Travellers ,, 1854 *Times and State (accident depart.)* ,, 1851

The income of the Co. was now considerable, and occasion was taken to investigate the results of the bus. Various changes were made, all of which have been referred to. In 1859 the business was on a sound basis ; and had up to that date been confined to accident bus. pure and simple. The *Maritime Passengers*, which it had absorbed, had a department for insuring the baggage of passengers, and the effects of captains and mariners from loss by marine casualty. This, in an evil day, led the Directors into the idea of extending the bus. to ordinary Marine Ins. The cap. was increased to £250,000, and underwriting was commenced. Never was a greater mistake. The two businesses have no sort of analogy—or only this that they are each made the vehicle of considerable frauds : marine ins. more especially. The result may be soon told. The profits of the accident portion of the bus. were absorbed by the marine ; and the cap. was also being steadily trenched upon. The Directors were advised to enlarge the marine bus. This they did in 1865, by a union with the *Accidental Marine Ins. Corp.* founded in that year. This union continued until October, 1866, when the last-named Co. passed into liquida-

tion ; and the *Accidental Death* Co. (No. 2) again resumed control of the bus.—that is, the accident portion of the bus. But the Co. was not in a position to carry on the same successfully. Hence the *Accident* Ins. Co. (No. 1) was founded ; and the affairs of this Co. passed into liquidation in the early part of 1868. The accident policy-holders were fully protected throughout these changes.

ACCIDENTAL INJURY AND DEATH ASSU. CO.—A Co. under this title was projected in 1850 by Mr. Wm. Campbell Sleight, Barrister-at-Law, but its objects had already been accomplished by then existing Cos. It did not proceed.

ACCIDENTAL AND MARINE INS. CORP. LIM., founded in Lond. in 1865, with an authorized cap of £1,000,000, in 40,000 shares of £25 (of which a portion only were subscribed), for the purpose of taking over the bus. of the *Accidental Death* (No. 2) and extending the operations of the Marine Ins. department. The Co. continued in bus. little more than twelve months, during which period it lost the whole of its paid-up cap., incurring liabilities which absorbed the whole of the subscribed cap., over £300,000, and left a considerable amount of liability unpaid. That the losses were occasioned by an almost systematic series of frauds cannot be doubted. But in this the Co. only shared the too general fate of young Marine Ins. offices. The Co. passed into liq. in Oct., 1866, the accident portion of the bus. being resumed by the Co. from whom it was originally taken.

ACCLIMATIZED LIVES.—These are lives which, from long residence in climates supposed, or known, to be prejudicial to human life, have become in a measure proof against the deleterious influences there prevailing. Life offices take this circumstance into account in fixing rates of prem. for residents abroad ; and especially make a distinction between such acclimatized persons, and others going for the first time to reside in such places. [FOREIGN RESIDENCE.]

ACCOMENDA, a contract whereby a person entrusts property to the master of a vessel to be sold for their joint profit. It is a term orig. in Italian mercantile law. The venture bears analogy to what is known here as “captain’s venture.”

ACCOMMODATED RATIOS.—This was a term applied to Life Ins. calculations by the late Mr. B. Gompertz. He prepared Tables intended to expedite the operations required for assuming the number of persons living at equal intervals of successive ages to be in geometrical progression, and the periods taken sufficiently short to permit this assumption to be a near approximation to the truth. See Mr. Gompertz’s paper, *Phil. Trans.* 1825.

ACCOUNTS OF LIFE OFFICES.—When the practice of pub. annual accounts first commenced we cannot precisely determine. Sir Fred. Eden in 1806, contrasting partnership Ins. Asso. with Trading Corporations, says the former might as easily as the latter show the soundness of their position, by (*inter alia*) pub. an annual account of their receipts and payments—“*though it is believed no office in Gt. Brit. does so.*” This statement was made by one of the best informed writers of that period. In 1826 Mr. Babbage recommended Life offices to pub. their accounts. In 1841 there was some agitation upon the subject. The Joint Stock Regis. Act, 1844, did require all Cos. regis. under it to make returns—other offices escaped. The Parl. Com. on Assu. Asso., 1853, took evidence upon the subject. [LIFE INS., HIST. OF.] Since then the subject has constantly engaged attention. At length came the Life Assu. Cos. Act, 1870, the 33 & 34 Vict. c. 61, which contains the following requirements :—

Sec. 5.—*Every Co. shall at the expiration of each financial year of such Co. prepare a statement of its revenue account for such year, and of its bal. sheet at the close of such year, in the forms respectively contained in the First and Second Schedules to this Act.*

To prevent any misapprehension, we give these schedules entire as follows :—

FIRST SCHEDULE.

REVENUE ACCOUNT of the for the year ending

18 Date.	Amount of funds at the beginning of the year	£ s. d.	18 Date.	Claims under policies (after de- duction of sums re-assured) ...	£ s. d.
	Premiums			Surrenders	
	Consideration for annuities granted			Annuities	
	Interest and dividends			Commission... ..	
	Other receipts (accounts to be specified)			Expenses of management ...	
				Dividends and bonuses to share- holders (if any)	
				Other payments (accounts to be specified)	
				Amount of funds at the end of the year, as per second sche- dule	
		£			£

NOTE 1.—Companies having separate accounts for annuities to return the particulars of their annuity business in a separate statement.

NOTE 2.—Items in this and in the accounts in the Third and Fifth Schedules should be the net amounts after deduction of the amounts paid and received in respect of re-assurances.

SECOND SCHEDULE.

BALANCE-SHEET of the

on the

18

LIABILITIES.		£ s. d.	ASSETS.		£ s. d.
Shareholders' capital paid up (if any)	£		Mortgages on property within the United Kingdom		
Assurance fund			Do. out of the United Kingdom		
Annuity fund (if any)			Loans on the Company's policies... ..		
Other funds (if any) to be specified			Investments :		
			In British Government Securities		
			Indian and Colonial Government Securities		
			Foreign Government do.		
			Railway and other debentures and debenture stocks		
			Do. shares (preference and ordinary)		
			House property		
			Other investments (to be specified)... ..		
			Loans upon personal security		
			Agents' balances		
			Outstanding premiums		
			Do. interest		
			Cash :		
			On deposit		
			In hand and on current account... ..		
			Other assets (to be specified)		
Total funds as per First Schedule	£				
Claims admitted but not paid*... ..					
Other sums owing by the Company* (accounts to be specified)					
	£				£

* NOTE.—These items are included in the corresponding items in the First Schedule.

Sec. 6 of the same measure enacts the following :—

Every Co. which, concurrently with the granting of policies of assurance or annuities on human life, transacts any other kind of assurance or other business, shall, at the expiration of each such financial year as aforesaid, prepare statements of its revenue account for such year, and of its balance-sheet at the close of such year, in the forms respectively contained in the Third and Fourth Schedules of this Act.

These forms are as follows : we give them *in extenso*, for the purpose of future reference, and with a view to avoid mistakes.

THIRD SCHEDULE.

REVENUE ACCOUNTS of the

for the year ending

No. 1.—LIFE ASSURANCE ACCOUNT.

Date.	Amount of life assurance fund at the beginning of the year ...	£ s. d.	Date.	Claims under life policies (after deduction of sums re-assured)	£ s. d.
	Premiums after deduction of re-assurance premiums			Surrenders	
	Consideration for annuities granted			Annuities	
	Interest and dividends			Commission... ..	
	Other receipts (accounts to be specified)			Expenses of management	
				Other payments (accounts to be specified)	
				Amount of life assurance fund at the end of the year, as per Fourth Schedule	
		£			£

NOTE.—Companies having separate accounts for annuities to return the particulars of their annuity business in a separate statement.

No. 2.—FIRE ACCOUNT.

Date.	Amount of fire insurance fund at the beginning of the year ...	£ s. d.	Date.	Losses by fire after deduction of re-assurances	£ s. d.
	Premiums received, after deduction of re-assurances			Expenses of management	
	Other receipts to be specified			Commission... ..	
				Other payments to be specified... ..	
				Amount of fire insurance fund at the end of the year, as per Fourth Schedule	
		£			£

NOTE.—When Marine or any other branch of business is carried on, the income and expenditure thereof to be in like manner stated in a separate account.

No 3.—PROFIT AND LOSS ACCOUNT.

Date.	Balance of last year's account... ..	£ s. d.	Date.	Dividends and bonuses to shareholders	£ s. d.
	Interest and dividends not carried to other accounts			Expenses not charged to other accounts	
	Profit realized (accounts to be specified)			Loss realized (accounts to be specified)	
	Other receipts			Other payments	
		£		Balance as per Fourth Schedule	£

NOTE.—This account is not required if the items have been incorporated in the other accounts of this Schedule.

FOURTH SCHEDULE.

BALANCE-SHEET of the

on the

18

LIABILITIES.				£	s.	d.	ASSETS.				£	s.	d.
Shareholders' capital	...	...	...				Mortgages on property within the						
General reserve fund (if any)	...	...	...				United Kingdom...	...	...	...
Life assurance fund*	...	...	...				Do. do. out of the United						
Annuity fund (if any)*	...	...	...				Kingdom	...	...	...
Fire fund	...	...	...				Loans on the Company's policies	...					
Marine fund	...	...	...				Investments:						
Profit and loss (if any)	...	...	...				In British Government Securities	...					
Other funds (if any) to be specified	...						Indian and Colonial Government						
							Securities	...	...	...
Claims under life policies ad-	£	s.	d.	£			Foreign Government do.	...	...	...
mitted but not yet paid*	...						Railway and other debentures and						
Outstanding fire losses	...						debenture stocks	...	...	...
Do. Marine do.	...						Do. shares (preference and ordinary)	...	...	...
Other sums owing by the	...						House property...	...	...	...
company (accounts to be	...						Other investments (to be specified)	...	...	...
specified)	...						Loans upon personal security	...	...	...
							Agents' balances	...	...	...
							Outstanding premiums	...	...	...
							Do. Interest	...	...	...
							Cash:						
							On deposit	...	...	£	
							In hand and on current	...	...	...
							account	...	...	...
							Other assets (to be specified)	...	...	...

* If the life assurance fund is, in accordance with section 4 of this Act, a separate trust fund for the sole security of the life policy-holders, a separate balance-sheet for the life branch may be given in the form contained in Schedule 2. In other respects the company is to observe the above form. See also note to Second Schedule.

The following sections of the Act also relate to accounts :—

9. The Board of Trade, upon the application of or with the consent of a company, may alter the forms contained in the Schedules to this Act, for the purpose of adapting them to the circumstances of such company, or of better carrying into effect the objects of this Act.

10. Every statement or abstract hereinbefore required to be made shall be signed by the chairman and two directors of the company, and by the principal officer managing the life assurance business, and, if the company has a managing director, by such managing director, and shall be printed; and the original, so signed as aforesaid, together with three printed copies thereof, shall be deposited at the Board of Trade within nine months of the dates respectively hereinbefore prescribed as the dates at which the same are to be prepared. And every annual statement so deposited after the next investigation shall be accompanied by a printed copy of the abstract required to be made by section seven.

11. A printed copy of the last deposited statement, abstract, or other document by this Act required to be printed shall be forwarded by the company, by post or otherwise, on application, to every shareholder and policy-holder of the company.

The Board of Trade is to lay before Parl. annually the "statements and abstracts of reports deposited with them under this Act during the preceding year." We understand that the accounts before being presented to Parl. are to undergo the process of examination by an Actuary specially selected for the purpose. In making this appointment it is of the utmost consequence that the selection should fall upon a man enjoying the widest confidence.

It seems desirable to draw attention to the fact that the provisions of the Companies Act, 1862, relating to Ins. Asso. have not been repealed; and sec. 44 of that Act requires that (*inter alia*) every Ins. Co. and Deposit, Provident, or Benefit So. regis. under that Act, *before it commences business*, and also *on the first Monday in February and the first Monday in August* in every year in which it carries on bus. shall make a statement in the following form, or as near thereto as circumstances will admit, and a copy thereof shall be put up in a conspicuous place in every office and branch office or place where the bus. of the Co. is carried on. Penalty on director or manager of Co. failing to comply, £5 per day. Copy of statement to be supplied to shareholder for sixpence :—

The cap. of the Co. is £ divided into shares of £ each. The number of shares issued is . Calls to the amount of £ per share have been made, under which the sum of £ has been received.

The liabilities of the Co. on the 1st of January (or July) were :—Debts owing to sundry persons by the company : On judgment, £ On specialty, £ On notes or bills, £ On simple contract, £ On estimated liabilities, £

The assets of the company on that day were :—Government Securities (stating them), £ Bills of Exchange and Promissory Notes, £ Cash at Bankers, £ Other Securities, £

This return will therefore have to be made as heretofore.

Under ACTUARIAL REPORT we have detailed the other returns required under the "Life Assu. Cos. Act, 1870."

ACCOUNTANT-GENERAL OF CHANCERY is an officer appointed by Act of Parl. to receive all the money lodged in Court. He keeps his account with the Bank of England, which is responsible for all sums lodged there by him. This is the officer with whom the Deposit required under the "Life Assur. Cos. Act, 1870," (sec. 3) is to be made. [DEPOSIT.]

ACCRUE.—To grow to, or to arise. As an "accruing bon.;" viz., the next bon. which is to be declared.

ACCUMULATED FUNDS OF LIFE OFFICES.—The accumulated fund of a Life Asso. should at all times be sufficient at least to re-insure the outstanding risks under its various classes of Annuity, Endowment, and Life policies, together with any Bonus additions already declared or guaranteed. In the case of a Co. having a proprietary capital, the accumulated fund should be sufficient for the purposes just indicated, plus the paid-up capital and all accumulations thereon. This subject will be dealt with very fully under *Finance of LIFE INS.* The "surplus funds" will be only the portion of the accumulated funds, *beyond* the purposes already named. In the case of a small office, liable to fluctuations in the actual, as against the expected, number of deaths, and also in the *amount* of the policies affected by such deaths, prudence will suggest the necessity of the accumulated fund being kept at a higher standard than that here indicated. The fund should never be lower.

ACCUMULATION.—For statutory limitations as to the period during which trust monies and property may accumulate, see **THELLUSSON ACT**.

ACCUMULATIVE LIFE ASSU. CO., founded in 1853 on the proprietary plan. The Earl of Devon was stated to be one of the promoters. In the same year of its birth it became united with the *Anglo-Australian*, and by other amalg. its surviving pols. ultimately merged into the *European*.

In a case arising out of the affairs of this Co., it was held by the Court of Common Pleas, *King v. Accumulative*, etc. (tried 1857), that a contract to pay a pol. out of particular funds did not amount to a contract to carry on bus., nor a contract not to hand over the funds to other persons; and that a pol.-holder whose pol. is not due cannot support an action for damages which he fears he will sustain, but which possibly he will not. [AMALGAMATION.]

ACCUMULATIVE INSURANCES.—See **DEPOSIT INS.**

ACHILLES BRIT. AND FOREIGN LIFE ASSU. ASSO. AND LOAN BANK, founded in 1840, with an authorized cap. of £500,000, in 20,000 shares of £25. The prospectus spoke of the inestimable benefits of Life Ins., but estimated that only 88,000 persons had at that date availed themselves of its advantages. The loan feature was put forward as affording to the policy-holder a means of advantage while living. The general features of the scheme were reasonable and good. Mr. Adolphus Courvoisier was the first Sec., and afterwards Mr. George Henry Brown became Superintending Director. In 1844 the bus. was trans. to **GT. BRIT. MUT.**

ACHILLES INS. CO. for Life, Fire, Loans, and Annuities, was projected in the first instance under the title of the *Indisputable*; and was founded in 1853 under the title above given. Its authorized cap. was £100,000, in 10,000 shares of £10. The prospectus estimated the number of persons whose lives were ins. at 200,000. Its policies were "strictly Indisputable except in cases of intentional and proved fraud." One-third of prems. were allowed to remain unpaid. The fire bus. was not long continued. The Co. at a later date took up the bus. of Fidelity Guarantee, and the ins. of Impaired Lives. Mr. Edward Miall, M.P., the eminent Nonconformist, became Chairman of the Co. Mr. H. B. Taplin was its Sec. In 1858 the life bus., which was considerable, was trans. to *City of Lond.*, and so passed on to the *Eagle*, to the great advantage of the policy-holders.

ACKNOWLEDGMENT OF NOTICE.—An admission by the chief or other duly authorized officer of an Ins. Co. of the receipt of a notice affecting the interest in a Life Policy. It is under the Po. of Assu. Act, 1867 (30 & 31 Vic. cap. 144, sec. 6), obligatory on an Office to give such acknowledgment on payment of a fee of 5s.; but this fee is not always insisted on. The acknowledgment is to be conclusive evidence against the office of the receipt of the notice. Notices rank in order according to the order of their receipt by the Office.

ACKWORTH, YORKS.: Its salubrity. See mort. observations under date 1767.

ACLAND, REV. JOHN, Rector of Broad-Clist, and one of His Majesty's J.P.s for the County of Devon, pub. at Exeter in 1786, "A plan for rendering the poor independent on public contribution; founded on the basis of the Friendly Societies, commonly called Clubs." To which is added, a Letter from Dr. Price, containing his sentiments and calculations on the subject.

ACQUIESCENCE.—Consent either expressed or implied. Questions of acquiescence arise not unfrequently in cases of amalg. and also in reference to the acts of agents. The subject is ably discussed in Bunyon's *Law of Life Ins.* [AGENTS.] [AMALGAMATION.]

ACQUITTANCE.—In law, the discharge in writing for a sum of money due. An acquittance not under seal is admissible only in evidence, and is not pleadable. An acquittance in full of all demands is an answer to all debts, except such as are in specialty.

ACTION, conduct, something done; also the form prescribed by law for the recovery of

one's due, or the lawful demand of one's right. In French, an *action* signifies a share in a public Co. ; and the shareholder is termed an "actionary."

ACTIONS UPON POLICIES OF INS. Many nice and curious legal questions from time to time arise when it becomes necessary to sue upon a policy of ins. ; or rather did arise, for recent legislation has done much in this direction. As this is not a treatise upon the law of Ins., no more will be said upon the subject than is necessary to the general understanding of the points which either did recently or do still arise, when a policy of ins. has to be sued upon in a court of law.

Originally actions on marine policies were brought in the **POLICIES OF INS. COURT**, founded with a special jurisdiction in 1601—reign of Elizabeth. Marshall says, that these policies being marine contracts, the law which regulates them is considered in most of the commercial states of Europe as a branch of Marine Law ; and, therefore, where no commercial tribunal is estab., questions arising on this contract generally belong to the jurisdiction of the Court of Admiralty. In Scotland such actions are in the first instance a subject of Admiralty jurisdiction. It does not appear that in England Courts of Admiralty have ever had jurisdiction in questions of insurance ; and since the abolition of the Policies of Ins. Court, actions upon policies are brought in our common law courts. Courts of Equity have no special jurisdiction in cases of Ins., although they will afford relief where their special interference becomes necessary ; and in case of disputes between the members of such Asso. themselves, the Courts of Equity alone have jurisdiction.

When it is necessary to enforce payment of the sum assured in a Court of Law, the answer to the question, against whom the action is to be brought, will depend upon the constitution of the particular office, and the form and provisions of the policy upon which the demand arises. Since the Common Law Procedure Act, 1852, the form of action ceases to be essential ; but the question, who are the proper defendants, is equally important as before.

When the Co. is incorp. either by Royal Charter or Act of Parl., the policy will be under common seal, and the action must be brought against the corp. as such, in which case it must appear by attorney authorized under the common seal ; and execution can be levied upon the partnership property alone.

When the policy is issued by a Co. estab. prior to the Ins. Stock Cos. Regis. Act (1844), the action may be brought against the Directors signing the policy, as if upon a covenant or undertaking by them.

When a private Act has been obtained, it will be convenient to proceed in accordance with its provisions ; but unless the terms of the Act are imperative, it does not follow that a claimant must do so : on the contrary, he may still proceed against parties executing the policy, or against any individual shareholder.—*Bunyon*.

Where a pol. is not under seal, an action may be maintained against the subscribing, or any other Directors or members. But when a pol. is under seal, those only who are parties to it can be sued upon it. Thus the Directors or Trustees signing must be sued ; and their having resigned office before the action be commenced will not stay the action.

In Equity also the Directors subscribing the pol. will, in the first instance, be the proper parties to represent the Co. either as plaintiffs : as when a bill is filed praying that the pol. may be delivered up as cancelled ; or as defendants, upon the refusal of the Co. to satisfy a claim thereon.

In the case of a Co. registered under the Cos. Act, 1862—that is, Lim. Liability Cos.—all actions must be against the Co. in its own name, according to the provisions of the Act.

Prior to 1833 no interest could be recovered on a principal sum sued for under the pol. of ins. Since the passing of the 3 & 4 Wm. IV., c. 42, s. 29, in that year, a jury may now add interest, after the time stipulated for payment in the pol. has passed, at their discretion. In the case of lost pol., upon which in consequence the Co. refuses to pay, no interest will accrue.

Where the pols. sued upon have been assigned—See **ASSIGNMENT OF POLICIES**.

Where the Co. is plaintiff, matters are much more simple. The action is brought either in the name of the Co. itself, or its proper officers, or as its own constitution or the law may direct. What we have already said will be a sufficient general indication of the points to be considered. [See **ARBITRATION**.]

ACTIVE LIFE ASSU. LOAN, ENDOWMENT, AND REV. INT. CO., founded in 1839, with an authorized cap. of £500,000, in 10,000 shares of £50. Its promoters endeavoured to popularize Life Ins. by proclaiming as a fact that "not more than one head of a family out of 62, or in all only about 80,000 persons, have as yet adopted the means presented to them of providing by Life Ins.," etc. They estimated that 500,000 possessed the pecuniary means of availing themselves of Life Ins., and their not doing so "affords a striking view of the improvidence of mankind." The managing Director was Mr. James Wemyss ; the Actuary, Mr. N. Welton. The prospectus further stated that "the only data upon which life contin. can be calculated may, and probably will, become progressively inapplicable through the efforts of advancing civilization and improvements in physiological science." This was not encouraging to proposed insurers. In a word, the management was too clever, and their bantling became abortive.

ACTIVE SERVICE.—The engagement in operations against an enemy by persons in the naval, military, or allied forces. All Life offices refuse to ins. officers and others in the army and navy during “active service” at the ordinary rates; and many offices appear to reject such risks altogether. We may here notice a few of the more notable exceptions to this last rule. The first we have met with was that of the *Crown Life*. In its orig. prosp. (1825) it announced that it had acquired the requisite *data* “for calculating a scale of prem. proportionate to the add. risks arising from actual service, and from sea and climate,” and intended to charge “moderate and corresponding rates” for such risks. [CROWN LIFE.] The *Royal Naval and Military Life* (1837) also made a special feature of the acceptance of risks of this class—see details in our hist. of that office. During the Crimean War the *Accidental Death Co.* ins. officers against death in action, at a special rate of £5 5s. p.c. Many offices which do not accept lives likely to enter upon active service, will yet quote a prem. to cover the risk in the event of the insured being called into service. The extra prem. in such cases is necessarily high. [WAR RISK].

ACTS OF PARLIAMENT.—We believe every Act of Parl. bearing upon the subject of Ins. in any of its branches or incidents will be found quoted in this work. We had intended giving a schedule of them; but they number many hundreds, and space forbids. The task of reading, classifying, and condensing them all has been very great; but the result we think worthy of the labour. The hist. of Ins. could never be written without this being done. We generally append the chronological date in citing an Act, which we believe will be found of great convenience.

ACTUAL SERVICE.—See ACTIVE SERVICE.

ACTUARIAL.—Pertaining to the profession or occupation of an Actuary.

ACTUARIAL ESTIMATES.—In 1859 Mr. Charles Jellicoe brought before the Institute of Actuaries a paper *On the rationale of certain Actuarial Estimates*. The purpose of this paper was to show that while there is always a difference between the purchasable and saleable values of properties held for life and in reversion, such difference is not to be regarded as merely arbitrary; but is based upon reasons and principles which are well understood, and should be uniformly acted upon. *Assu. Mag.*, vol. 8, p. 310.

ACTUARIAL INVESTIGATIONS.—An Actuarial Investigation is the process employed periodically in the conduct of the affairs of a L. or Annu. Asso., with a view either to test its bare solvency, or more generally and more happily, to ascertain what surplus there may be for distribution after every proper provision has been made for the outstanding liabilities of all kinds.

The reasons why such investigations are necessary, as distinguished from their objects, arise out of the peculiar nature of L. Ins. contracts, and the lengthened period over which they generally extend. Dr. Farr says: “The commercial balance-sheet, in the most correct form, fails to present a correct view of the condition of a L. Office transacting ordinary bus.; as its liabilities are distant, *contingent*, and every year vary in value”—hence a special mode of treatment has been devised which it is our present purpose to explain. Mr. Neison says: “No balance-sheet that I am capable of comprehending would be available for the purpose of showing the actual condition of an office in the same manner, as such a thing would be in the case of a banking house.” Mr. Finlaison declares that “From the largest office in England to the smallest benefit club there is *no certainty whatever in relying upon any Tables without periodic investigations*.” Mr. Morgan observed, in one of his eloquent addresses, what signify premiums, however correctly computed, “if no means are provided for ascertaining, at proper intervals, the real state of the inst., and for disposing of its profits without endangering its security, either by a direct or an indirect invasion of its capital?”

Actuarial Investigations are now made compulsory under sec. 7 of Life Assu. Cos. Act, 1870. We detail its requirements under ACTUARIAL REPORT. [BONUSES, mode of ascertaining.] [VALUATION for SURPLUS.]

In the U.S. the Ins. Commissioners or Superintendents of the several States have specific or assumed power to investigate the affairs of the various offices transacting bus. within those States. We may quote a sec. from the Ins. Law of California, passed 1868, as furnishing a type of the powers given:

SEC. 5.—The Ins. Commissioner shall have power to investigate and inquire into the bus. of ins. transacted in this State; and if any person engaged in the bus. of ins. shall refuse to give to the Commissioner full and truthful information and response in writing to any inquiry or question made in writing by the Commissioner relating to the bus. of ins. as carried on by such person, then such person so refusing, and for each refusal, shall forfeit and pay to the people of this State the sum of 500 dols. The collection of such forfeitures and payment thereof may be enforced by the Commissioner, and for that purpose suits may be instituted in the name of the people of the State of California, in any court of competent jurisdiction.

In the States of Illinois, Iowa, Massachusetts, Michigan, Missouri, and New York, the investigation may be carried so far as to value every life policy issued; and in some cases it is even compulsory on the department so to value the policies at stated periods.

ACTUARIAL MAGAZINE.—In 1868 Mr. Herschel Filipowski commenced the pub. of a periodical under this title. It purports to contain orig. Tables relating to life contingencies, vital statistics, int. and discount, and kindred subjects not before pub. The following is a list of the contents of the numbers which have already appeared; the Tables being numbered consecutively:—

- I. Showing the annual from the single prem. for an Assu. of £100. From 3 to 10 p.c.
- II. Deferred annuities on single Lives. Equitable experience, 3½ p.c. By Benjamin Hall Todd.
- III. Temporary annuities on single Lives. Equitable experience, 3½ p.c. Also by Mr. Todd.
- IV. Annuities on three joint Lives. Carlisle 3 p.c. By Mr. Filipowski.
- V. Single prem. for an Endow. Assu. of £1. English Life Table II., 3 & 4 p.c. H. Filipowski.
- VI. Single prem. for an Assu. of £1 on the life of A against B. Carlisle 5 & 6 p.c. By Mr. Filipowski.
- VII. The present value of £1 Reversion interpolated for months. Carlisle 4 p.c.
- VIII. Logarithms of the present value of £1 Annuity + 1. Carlisle 4 p.c.
- IX. The present value of £1 annuity + 1, interpolated for months. Carlisle 4 p.c.
- X. Showing the age at which a policy may become payable in consideration of an annual bonus of £1, for quinquennial periods. Carlisle 3 p.c.
- XI. & XII. Artificial logarithms, showing the amount of reversionary bonus in lieu of an Endow. Assu. Carlisle 3 p.c.
- XIII. D and N columns and Annuities. New experience tables 3 p.c. Ungraduated.
- XIV. Annual prem. for an Endow. Assu. of £100. English L. Table III., 3½ p.c.
- XV. The value of a policy the premium just due, after being in force from 1 to 50 years, with monthly corrections. Carlisle 4 p.c. By Mr. Filipowski.
- XVI. The value of a policy as above. Carlisle 3½ p.c.
- XVII. The value of a policy as above. Carlisle 3 p.c.
- XVIII. Money Exchange of all Nations. H. Filipowski.
- XIX. The value of a Policy of £100, after being ins. any number of years not exceeding 65, by increasing prems. Experience 3½ p.c. Mr. J. E. Leyland.
- XX. The value of a policy of £100, after being in force any number of years and months, including part of prem. for the unexpired months. Equitable experience 3½ p.c. Mr. B. Hall Todd.
- XXI. Mort. Table of the New experience, as adjusted by Mr. Filipowski.
- XXII. Commutation Columns, Annuities, Single and Annual Prems. for Assu. New experience 3 p.c. By H. Filipowski, graduated by Mr. Woolhouse.
- XXIII. The same, according to the graduation of Mr. Filipowski.
- XXIV. Value of a policy of £1. Experience 3 p.c.

ACTUARIAL REPORT.—The Assu. Cos. Act, 1870, by sec. 7, provides as follows :

Every company shall, once in every five years, if established after the passing of this Act, and once every ten years if established before the passing of this Act, or at such shorter intervals as may be prescribed by the instrument constituting the company, or by its regulations or bye-laws, cause an investigation to be made into its financial condition by an actuary, and shall cause an abstract of the report of such actuary to be made in the form prescribed in the fifth Schedule to this Act.

The 5th Schedule of the Act is as follows :

STATEMENT respecting the VALUATION of the LIABILITIES under LIFE POLICIES and ANNUITIES of the , **to be made by the Actuary.**

(The answers should be numbered to accord with the numbers of the corresponding questions.)

1. The date up to which the valuation is made.
2. The principles upon which the valuation and distribution of profits among the policy-holders are made, and whether these principles were determined by the instrument constituting the company, or by its regulations or bye-laws, or otherwise.
3. The table or tables of mortality used in the valuation.
4. The rate or rates of interest assumed in the calculations.
5. The proportion of the annual premium income (if any) reserved as a provision for future expenses and profits. (If none, state how this provision is made.)
6. The consolidated revenue account since the last valuation, or, in case of a company which has made no valuation, since the commencement of the business. (This return should be made in the form annexed.)
7. The liabilities of the company under life policies and annuities at the date of the valuation, showing the number of policies, the amount assured, and the amount of premiums payable annually under each class of policies, both with and without participation in profits; and also the net liabilities and assets of the company, with the amount of surplus or deficiency. (These returns should be made in the forms annexed.)
8. The time during which a policy must be in force in order to entitle it to share in the profits.
9. The results of the valuation, showing :—
 - (1.) The total amount of profit made by the company.
 - (2.) The amount of profit divided among the policy-holders, and the number and amount of the policies which participated.
 - (3.) Specimens of bonuses allotted to policies for £100 effected at the respective ages of twenty, thirty, forty, and fifty, and having been respectively in force for five years, ten years, and upwards, at intervals of five years respectively, together with the amounts apportioned under the various modes in which the bonus might be received.

The forms required by the preceding Schedule are the following :

(FORM referred to under heading No. 6 in the Fifth Schedule.)

CONSOLIDATED REVENUE ACCOUNT of the for **years, com-**
mencing **and ending**

	£	s.	d.		£	s.	d.
Amount of funds on , 18 , the beginning of				Claims under policies (after deduction of sums re-assured)			
Premiums (after deduction of re-assurance premiums)				Surrenders			
Consideration for annuities granted				Annuities			
Interest and dividends				Commission			
Other receipts (accounts to be specified)				Expenses of management... ..			
				Dividends and bonuses to shareholders (if any)			
				Other payments(accounts to be specified)			
				Amount of funds on , 18 , the end of the period, as per First (or Third) Schedule			
	£				£		

(FORM referred to under heading No. 7 in Fifth Schedule.)

SUMMARY and VALUATION of the POLICIES of the as at 18 .

Description of Transactions.	Particulars of the Policies for Valuation.				VALUATION.			
	Number of Policies.	Sums assured and bonuses.	Office yearly premiums.	Net yearly premiums, if ascertained.	Value by the Interest		Table, per cent.	
					Sums assured and bonuses.	Office yearly premiums.	Net yearly premiums, if computed.	Net liability.
ASSURANCES.								
I. With participation in profits.								
For whole term of life								
Other classes (to be specified) ...								
Extra premiums payable								
Total assurances with profits								
II. Without participation in profits.								
For whole term of life								
Other classes (to be specified) ...								
Extra premiums payable								
Total assurances without profits								
Total assurances								
Deduct re-assurances								
Net amount of assurances								
Adjustments, if any								
ANNUITIES.								
Immediate								
Other classes (to be specified) ...								
Total of the results								

The term "extra premium" in this Act shall be taken to mean the charge for any risk not provided for in the minimum contract premium. If policies are issued in or for any country at rates of premium deduced from tables other than the European mortality tables adopted by the Company, separate schedules similar in form to the above must be furnished.

(FORM referred to under heading No. 7 in Fifth Schedule.)

VALUATION BALANCE-SHEET of as at 18 .

Dr.	£ s. d.	Cr.	£ s. d.
To net liability under Assurance and Annuity transactions (as per summary statement provided in Schedule 5) ...		By life assurance and annuity funds (as per balance-sheet under Schedule 2 or 4)	
To surplus, if any		By deficiency, if any	
£		£	

The Act further provides (sec. 8) :

8. Every company shall, on or before the thirty-first day of December, 1872, and thereafter within nine months after the date of each such investigation as aforesaid into its financial condition, prepare a statement of its life assurance and annuity business in the form contained in the *sixth schedule* to this Act, each of such statements to be made up as at the date of the last investigation, whether such investigation be made previously or subsequently to the passing of this Act. Provided as follows :—

- (1.) If the next financial investigation after the passing of this Act of any company fall during the year 1873, the said statement of such company shall be prepared within nine months after the date of such investigation, instead of on or before the thirty-first day of December, 1872.
- (2.) If such investigation be made annually by any company, such company may prepare such statement at any time, so that it be made at least once in every three years.

The expression "date of each such investigation" in this section shall mean the date to which the accounts of each company are made up for the purposes of each such investigation.

The "Sixth Schedule" is as follows :

SIXTH SCHEDULE.

STATEMENT of the LIFE ASSURANCE and ANNUITY BUSINESS of the on the 18

(The answers should be numbered to accord with the numbers of the corresponding questions. Statements of re-assurances corresponding to the statements in respect of assurances, under headings 2, 3, 4, 5, and 6, are to be given.)

- 1. The published table or tables of premiums for assurances for the whole term of life which are in use at the date above mentioned.
- 2. The total amount assured on lives for the whole term of life, which are in existence at the date above mentioned, distinguishing the portions assured with and without profits, stating separately the total reversionary bonuses, and specifying the sums assured for each year of life from the youngest to the oldest ages.
- 3. The amount of premiums receivable annually for each year of life, after deducting the abatements

made by the application of bonuses, in respect of the respective assurances mentioned under heading No. 2, distinguishing ordinary from extra premiums.

4. The total amount assured under classes of assurance business, other than for the whole term of life, distinguishing the sums assured under each class, and stating separately the amount assured with and without profits, and the total amount of reversionary bonuses.

5. The amount of premiums receivable annually in respect of each such special class of assurances mentioned under heading No. 4, distinguishing ordinary from extra premiums.

6. The total amount of premiums which has been received from the commencement upon all policies under each special class mentioned under heading 4 which are in force at the date above mentioned.

7. The total amount of immediate annuities on lives, distinguishing the amounts for each year of life.

8. The amount of all annuities other than those specified under heading No. 7, distinguishing the amount of annuities payable under each class, the amount of premiums annually receivable, and the amount of consideration money received in respect of each such class, and the total amount of premiums received from the commencement upon all deferred annuities.

9. The average rate of interest at which the life assurance fund of the company was invested at the close of each year during the period since the last investigation.

10. A table of minimum values (if any) allowed for the surrender of policies for the whole term of life and for endowments and endowment assurances, or a statement of the method pursued in calculating such surrender values, with instances of its application to policies of different standing and taken out at various interval ages from the youngest to the oldest.

Separate statements to be furnished for business at other than European rates, together with a statement of the manner in which policies on unhealthy lives are dealt with.

ACTUARIAL SOCIETY OF EDINBURGH.—This So. was founded in 1856, on the occasion of a secession from the Institute of Actuaries of Gt. Brit. of most of the Scotch members. The So. embodies all the leading actuaries of Scotland, and in 1868 received a Charter of Incorp. under the title of FACULTY OF ACTUARIES IN SCOTLAND, under which head will be found a more detailed notice.

ACTUARIAL TABLES.—These are of several classes, as Tables of Simple and Compound Int., Tables of Annuities, and Tables of Logarithms. But what may be regarded as coming more closely within the scope of this definition, are Tables of money-values deduced from the combined effects of int. and prob., especially as connected with the duration of human life. We propose here to give a chronological list of Tables answering more particularly to the last definition; adding such observations as seem essential. We believe no such list has been heretofore compiled. Observations and criticisms on the Mort. Tables will be given when we treat of those Tables; and the proper rate of int. to be assumed under given circumstances will be discussed under INTEREST, RESERVE, VALUATIONS, etc. A chronological list of Tables of LOGARITHMS will be given hereafter.

Tables of Int. were pub. at a very early date, but the earliest we need note here are those pub. by "John Smart, at the Town Clerk's Office, Lond.," in 1707, viz :

Tables of Simple Int. and Discount at 3, 4, 5, 6, 7, 8, 9, and £10 p.c. p.a.; also Tables of Compound Int., whereby the amount or present value of any sum of money, or any annuity, or other yearly payment, etc., for any number of years not exceeding one hundred is readily found. (See again 1726)

In 1725 Abraham De Moivre, F.R.S., pub. the first ed. of his Treatise of Annuities on Lives, and thereto was appended a Table: The present value of an annuity of one pound for any number of years not exceeding 100. Int. at 5 p.c. This Table was founded on the Breslau Mort.

In 1726 Smart pub. 2nd ed. of his Tables, and therein was contained "a Table to calculate the value of annuities upon lives." But this Table was constructed on a plan the very reverse of more modern Tables. It was made to show, not how long the annuitant might be expected to live—but *how long he must live in order to be reimbursed the value of his purchase-money.*

In 1727 Mr. Richard Hayes pub. a new method for valuing annuities upon lives, showing at sight as follows: 1. How many years, months, etc., purchase an annuity upon life, for any age from 30 to 73 years, is worth, when money yields 4, 5, 6, 7, or 8 p.c. int. 2. How much a year £100 is worth upon life for any of the above ages, etc. 3. How many years an annuitant must live to receive the value of the money sunk, etc., etc.

In 1742 Mr. Thomas Simpson pub. The Doctrine of Annuities and Reversions, deduced from general and evident principles, with useful Tables showing the values of single and joint lives, etc., at different rates of int., etc. These Tables were deduced from the Lond. Tables of Mort.

In 1747 Mr. James Hodgson pub. The Valuation of Annuities upon Lives deduced from the Lond. Bills of Mort., wherein was contained Tables of values at 3, 4, and 5 p.c. p.a.

In 1751 Mr. Weyman Lee pub. (appended to his work on annuities) Tables of the value of Annuities and Leases certain, for years, and for a single life at every age of life, at the rates of 3, 4, 5, and 6 p.c. int.

In 1754 Mr. S. Stonehouse pub. The Valuation of Annuities on Lives deduced from the Lond. Bills of Mort., with several Tables exhibiting at one view the Values of Lives at different rates of Int., and Tables of Compound Int., and of Fines for renewing College Leases, etc.

In 1762 was pub. Dr. Price's famous work: Observations on Reversionary payments, wherein he gave various Tables, mostly Simpson's, based upon the Lond. Bills of Mort.

In 1772 Dale's Calculations, deduced from first principles, was pub. The Tables included therein were Simpson's and others.

In 1779 Mr. Wm. Morgan pub. *The Doctrine of Annuities and Assu. on Lives and Survivorships*, and therein was contained tables of the values of single lives, of two equal joint lives, and of two lives differing in age by 60 years, computed from the *Northampton Tables*, not then published.

In 1780 Charles Brand pub. an ed. of Smart's *Tables of Int., Discount, and Annuities*, etc., enlarged, revised, and improved. It was then regarded as a very important work.

In 1783 Dr. Price first pub. his *Northampton Table of Mort.* with extensive *Tables of money-values* based thereon. These *Tables* are so well known that we need not stay to enumerate them.

In 1802 Mr. Francis Baily pub. *Tables for the Purchasing and Renewing of Leases* for terms of years certain and for lives ; with rules for determining the value of the reversion of estates after any such leases, etc.

In 1815 Mr. Milne pub. the famous *Carlisle Table of Mort.*, and at the same time gave a valuable series of *Tables of Monetary values* deduced therefrom. These also are so well known as not to require detailed enumeration.

In 1825 Mr. Griffith Davies pub. *Tables of Life Contingencies*, containing the rate of mort. among the members of the *Equitable So.*, and the values of Life Annuities, Reversions, etc., computed therefrom, together with a more extensive scale of prems. for Life Assu. deduced from the *Northampton Table* than any theretofore pub., and the progressive values of life policies.

In 1832 Mr. T. R. Edmonds pub. *Life Tables*, founded upon the discovery of a numerical law regulating the existence of every human being, etc. These tables may be regarded as having a scientific rather than a practical value.

In 1840-41 Mr. David Jones's well-known *Tables* in 2 vols. were pub. The series is very extensive, but the work has the merit of being everywhere known, and therefore requires no detailed notice here.

In 1841 Mr. Edward Sang pub. in Edin., *Life Assurance and Annuity Tables, with a copious collection of rules and examples*, 2 vols. great folio.—The description and uses of the tables fill 98 pages of intro. ; as there is no index of contents, it becomes necessary to enumerate the tables by groups, in order to give some idea of their extent and variety ; premising that the ages are carried from 0 to 100, and that the values are accompanied by their logarithms in five decimals. No distinction is made between male and female life ; the values are all based on *Carlisle tables* at 3 per cent.

1. Logarithms of all numbers under 10000 ; 2. Numbers to all logarithms of four places.

FOR ONE LIFE.—3. Annuity and Assurance, constant and increasing ; 4. Annuity and Assurance, short and deferred, and Policy current with risk ; 5. Short period premiums for assurance at death, by 2, 3, 4, . . . 21 annual payments ; 6. Variable premiums for assurance at death, increasing and decreasing quinquennially by steps of 10, 15 and 20 per cent. ; 7. Variable premiums for assurance at death, increasing and decreasing septennially by steps of 10, 15, and 20 per cent. ; 8. Annuities, the payment of which is to cease on the attainment of the ages of 70, 65, 60, 55, 50 years ; 9. Premiums for assurance at death, the payment of which is to cease on the attainment of the ages 70, 65, 60, 55, 50 years ; 10. Present value of assurances payable at death or on the attainment of the ages of 70, 65, 60, 55, 50 years ; 11. Annual premiums for assurances payable at death or on the attainment of the ages 70, 65, 60, 55, 50 years ; 12. Present value of annuities of which the payment is to commence on the attainment of ages 70, 65, 60, 55, 50 years ; 13. Annual premiums for annuities, of which the payment is to commence on the attainment of ages 70, 65, 60, 55, 50 years ; 14. Present values of endowments at the ages 70, 65, 60, 55, 50 years ; 15. Annual premiums for endowments at the ages 70, 65, 60, 55, 50 years ; 16. Present values of endowments 10, 15, 20, 25, 30, years hence ; 17. Annual premiums for endowments 10, 15, 20, 25, 30, years hence ; 18. Annual premiums for short period assurances, 2, 3, 4, . . . 21 years ; 19. Endowments at the ages 14, 15, 16, 17, 18, 19, 20, 21 years.

FOR TWO LIVES.—20. Logarithms of joint endowments ; 21. Joint annuities, first payment now ; 22. Joint annuities, first payment one year hence ; 23. Annuity during A's survivorship ; 24. Annuity during B's survivorship ; 25. Survivorship annuity ; 26. Longest-life annuity, first payment now ; 27. Longest-life annuity, first payment one year hence ; 28. Assurance at A's death, if first ; 29. Assurance at B's death, if first ; 30. Assurance at first death ; 31. Assurance at A's death, if second ; 32. Assurance at B's death, if second ; 33. Assurance at second death.

In 1843 Mr. Jenkin Jones pub. a series of *Tables of annu. and assu.*, calculated from a new rate of Mort. amongst assu. lives. The first and only set of actuarial *Tables* deduced from the *Experience* of the 17 offices in this country.

In 1850 Mr. Wm. Orchard pub. single and ann. prems. for every value of annu. on single and joint lives, or survivorships, adapted to any *Table of mort.* at $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, 6, and 7 p.c., also a *Table* for the formation of half-yearly and quarterly assu. prems.

Mr. Peter Gray says (*Assu. Mag.* vol. vi., p. 181) :

The values which it has been heretofore customary to tabulate for actuarial purposes, in connexion with specified rates of mort. and int., are those of annu. on single and joint lives at all ages ; and from these by operations more or less complex, and with the aid of subsidiary *Tables*, the actuary has had to

form such other values as might be required in the solution of any particular problem in hand. Of the values thus requiring to be formed, those of the single and ann. prems. for assu. occur perhaps more frequently than any others; and hence the desirableness of simplifying as much as possible the operations by which these are deduced from the corresponding annuities. To effect this simplification was the object of Mr. Orchard's work, in which, as will be admitted by all competent to form an opinion on the subject, the author has been completely successful. The arithmetical operation heretofore necessary has been entirely superseded, and the required values are found simply by inspection.

In 1850 Mr. Wm. Wood pub. conversion tables, showing the single and ann. prems. for assu. payable on the extinction of any single or of any joint lives, or of the longest of any two or more lives, deduced from the values of life annu. at various rates of int.

The purpose of these Tables was the same as that of Mr. Orchard's. Mr. Wood says :

The object of the following tables is to save the labour of calculating, from the values of the annu. the single and ann. prems. for an assu. of a sum payable at the end of the year in which any single life, or joint lives, or the longest of any two or more lives, shall become extinct. The single prems. for £100 are given at 3, $3\frac{1}{2}$ and 4 p.c. The ann. prems. are given at 4 p.c. for every difference of one penny. From these the ann. prems. deduced from the same annu. derived from other rates of int. are readily obtained. . . . The tables it will thus be seen are thoroughly practical. The results are of course applicable to any tables of life annu., from whatever rate of mort. they may be derived.

In 1851 Mr. Peter Gray, Mr. W. A. Smith, and Mr. W. Orchard, jointly pub. Ins. and Annu. Tables according to the Carlisle Mort. at 3 p.c. These Tables included present value of annu. and single and ann. prems. for survivorship ins. on every combination of two lives.

Table VII. is a conversion table for passing from the value of an assu. to that of an annu. In the intro. to the vol., believed to have been written by Mr. Gray (Mr. Orchard being then dead), there is the following :

It is proper to mention that the idea of this table belongs to Mr. Orchard, one of the compilers of the present work. Mr. Orchard pub. in May last a work entitled, "*Single and Ann. Assu. prems. for every value of Annuity on Single or Joint Lives, or Survivors,*" etc., at eight rates of int.; the object of which is, as its title imports, from the value of an annuity on a specified status to pass to either the single or the ann. prem. for assu. on the same status. From this the transition to the inverse form of the table here given was easy.

Mr. Orchard exhibited some specimens of his tables, in manuscript, at one of the sessional meetings of the Inst. of Actuaries, on the 8th January, 1850; and singularly enough, at the very next meeting on the 28th of same month, there was laid on the table a copy of the work having the same object in view. It is intitled *Conversion Tables*, by Wm. Wood, F.S.A., etc. On comparison of the two works, it will appear that while the idea on which they are founded is the same, they have little in common in the manner in which that idea has been carried out by the respective authors.

In 1851 Mr. W. T. Thomson pub. a large Sheet Table comprising annuity values at every age, based upon the *Carlisle* Table 3 per cent. (See again 1853.)

In the same year Mr. Filipowski pub. (in an appendix to his anti-logarithms), a Table of Annuities for 3 joint lives at 3 per cent. *Carlisle*. This table arranged for all Quinquennial Combinations was first pub. in 1850.

In 1852 Mr. Benjamin Hall Todd pub. *Life Assu. Investigation Tables*, showing the value of £100 policy for any number of years (not exceeding 50) interpolated for months, according to the *Carlisle* T. of Mort. and 3 p.c. int.; also ann. and single assu. prems., *Carlisle* T. 3 p.c. int., interpolated for months. The author says :

With the aid of the tables at present in use, the method of valuing policies may be sufficiently curt and convenient for ordinary practical purposes; but when the Actuary has to investigate the affairs of a Co. and to ascertain its true position, the labour attending such an inquiry is very arduous; and from the immense mass of figures to be dealt with, all such investigations require to be very carefully checked to insure that correctness which the importance of the subject demands. . . . It was under these impressions that the idea of forming a table of the value of policies first suggested itself to the author.

In 1853 Mr. W. T. Thomson pub. Actuarial Tables, *Carlisle* 3 p.c. single lives and single deaths, with auxiliary tables, in one vol.; a most comprehensive and excellent arrangement characterizes these tables; they are too well known to all actuaries to require detailed notice here.

In the same year there was pub. in *Assu. Mag.* (vol. iii.) the five orig. Tables compiled by Mr. Peter Hardy, deduced from the Mort. experience of the *Equitable* So. [EQUITABLE SO. EXPERIENCE.]

In the same year (1853) the Hon. Elizur Wright, then Ins. Commissioner for the State of Massachusetts, pub. in Boston. U.S., Valuation Tables on the *Combined experience* rate of Mort. for the use of Life Ins. Cos. These Tables give the ann. monthly and daily values of policies, at 3 and 4 p.c. int., for all periods and ages from 10 to 100; and they constitute the standard by which the position of asso. doing life bus. in that State are annually tested. But for the aid of such a set of Tables, it would be impossible for the officers of the Ins. department to make these yearly tests. A 2nd ed. of these Tables, with many add., has been pub. during the present year. (See 1871.)

In 1854, Mr. Peter Hardy pub. in *Assu. Mag.* (vol. iv.) a Table showing the present value of £1 p.a. for any number of years not exceeding 100, at the following rates of int. : $1\frac{1}{2}$, $1\frac{3}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{1}{4}$, $2\frac{3}{4}$, $2\frac{1}{2}$, and $2\frac{3}{4}$.

In 1855 there was pub. in *Assu. Mag.* (vol. v. pp. 363-8) Tables of single and ann. prems. for Joint Life Ins. for all ages between 15 and 60, deduced by William Braid, of Edinburgh, from the *Carlisle* Table. Int. 3 p.c.

Same year there was pub. also in *Assu. Mag.* (vol. vi. pp. 115-120) a series of tables

for determining the values of annu. and assu. on 3 lives according to the *Carlisle* Table of Mort., and showing the values of the annu. payable during the joint lives. Int. 3 p.c. By the same author.

Same year, *Assu. Mag.* (vol. v.) contains a Table constructed by Charles Gabriel Shaw: value of £1 during the joint continuance of 3, 4, 5, and 6 lives of equal ages. *Carlisle*. 3 p.c.

In 1857, Mr. W. E. Hillman pub. Tables of the Value of a Policy of Ins. for £1, according to the mort. indicated by the *Carlisle* observations, and also the Combined Experience of Life Ins. Cos. at 3, 3½, and 4 p.c. int., with preparatory Tables for ascertaining the value of such ins. for every age from 14 to 60 years, and of duration from 1 to 50 years. Tables of this description were much required in the profession; but unfortunately these have not quite met the requirement. Mr. Laundry, writing to the *Assu. Mag.* (vol. ix. p. 239), says, "Instead, however, of obtaining the expected aid, I discovered that a considerable number of the values I had based upon Mr. Hillman's figures were untrue, owing to the extreme inaccuracy of the Table referred to (Experience Table), *not a page of which is without numerous errors.*" Mr. Laundry recalculates the entire table. Mr. Manly (*Assu. Mag.* vol. xiv. p. 264) says: I can fully endorse Mr. Laundry's remark that no reliance whatever can be placed upon the correctness of the values in Hillman's Tables.

In 1858 Mr. David Chisholm pub. Commutation Tables for joint annu. and survivorship assu. based on the *Carlisle* Mort. at 3, 3½, 4, 5, and 6 p.c. int., with tables of annu. and assu. on single lives, and other useful tables, and an intro. on their construction and use. "The object of the present pub. is to provide the actuary with a complete series of life assu. tables on the system originated by the late Geo. Barrett, and improved by Mr. Griffith Davies."

In 1859 Mr. Jardine Henry pub. The Government Annuity Tables, embracing the values of annu. on single, and two joint lives, at 3, 4, 5, and 6 p.c. p.a. for every combination of age and sex, founded upon the mort. obs. contained in Mr. John Finlaison's report, 1829. It has always appeared to us that the compiler of these tables has fallen into the error of taking for the base of his calculation, observations No. 8 and 15 of the late Mr. Finlaison, instead of Nos. 13 and 20—which latter were really the ones upon which all the Tables of Life Annuities computed for the service of the Government were based. Has this been previously observed?

In 1861 Mr. W. Downing Biden pub. Rules, Formulæ, and Tables for the valuation of Estates, whether Freehold, Copyhold, or Leasehold, in possession or in reversion, and dependent on terms of certain duration, or on a Life or Lives; with new Rules and Tables for ascertaining the correct market value or fair price to be given for annu., rev. and next presentations, in order to secure to the purchaser a certain rate of int. on equitable terms; and a set of Conversion Tables for ascertaining from the price of an Annu. the cost of a Rev., to allow the purchaser a given rate of int. with security.

Some of these tables are deduced from the *Carlisle* Mort., some from the *English* Life Tables.

In 1863 Mr. Andrew H. Turnbull pub. Tables of Compound Int. and annu., yearly, half-yearly, and quarterly payments in decimals and currency; with rules for determining the amount of principal and int. in any payment of annu., and for the construction of Tables showing the same.

In 1864 Dr. Farr pub. English Life Tables (No. 3.), Tables of Lifetimes, annuities and premiums, with an intro. The tables are very extensive, comprising, in single lives, an entire suit of commutation columns at the several rates of interest from 3 to 10 p.c., for male and female lives separately, by whole years as usual; with additional ones by half-yearly and quarterly values of int. and mort.; and every possible combination of two joint lives, male and female, two males and two females, interest at 3 p.c. The fundamental logarithmic columns were evolved and printed by Scheutz's calculating machine, made in London by Mr. Donkin. The admirable introduction to the work cannot be too much commended to the actuarial student. It epitomizes the entire analysis of the science; and, amongst its other and various merits, points emphatically to a distinction between interest and discount, which has sometimes been misunderstood.—*Paterson*.

In 1866 Mr. Jardine Henry pub. vol. 1 of his Government Life Annu. Commutation Tables for single and two joint lives at 0, 1, 2, 2½, 3, 3½, 4, 5, 6, 7, 8, 9, and 10 p.c. p.a.; and for three and four joint lives at 3 and 6 p.c. p.a., founded on the experience of the Government annuitants up to 1823, and on the further experience from 1823 to 1853, with Tables showing on inspection the ann. prems. for an ins. of £100, by the above or by any other Tables, for single, two, three, and four joint lives, at 3 p.c., and also at all other rates on addition of constants. The work is to be completed in 8 vols. See an observation we have made regarding his previous work, 1859.

In 1868 the pub. of the ACTUARIAL MAG. was commenced. It contains a number of orig. Tables. [ACTUARIAL MAG.]

In 1869 was pub. (part 1) Valuation Tables, prepared specially for the use of the Ins. Department, State of New York, and based upon Homan's Table. Int. 4½ p.c. [AMERICAN MORT. TABLES.] The following is a statement of the Tables contained therein:

I. (43 pages), showing the net values per one thousand dollars of whole life pol. with equal annual prem., for December 31st of each year, interpolated for months, with a side table giving the monthly and daily difference and the values at the beginning and end of each policy year.

II. (one p.), showing the net values per one thousand dollars of whole-life pol. prem. paid by a single payment; serving also for the valuation of additions or reversionary dividends and all whole-life pol. fully paid up, whether by a single payment, or by five, ten, or any other number of payments; table interpolated for months, with the same side-table as in No. I.

III. (5 p.), showing the net values per thousand dollars of whole-life pol. by equal annual prem. for five years or till previous death, interpolated for months, with the same side-table as in No. I.

IV. (10 p.), showing the net values per one thousand dollars of whole-life pol. by equal annual prem. for ten years or till previous death, interpolated for months, with the same side-table as in No. I.

V. (3 p.), showing the net values per one thousand dollars of whole-life pol. by equal annual prem. for fifteen years or till previous death; giving values at the beginning and end of each policy year, with the monthly difference.

VI. (4 p.), showing the net values for one thousand dollars of whole-life pol. by equal annual prem. for twenty years or till previous death; giving the values at the beginning and end of each policy year, and the monthly difference.

VII. (28 p.), showing the net values per one thousand dollars of endowment assu. pol. maturing at age 65, with equal annual prem. till maturity or previous death, interpolated for months, with the same side-table as in No. I.

In 1870 part 2 of the same work was issued, and contained the following Tables :

Nos. VII.A, VII.B, VII.C, and No. VIII. (25 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at ages 25 and 60, by payments as specified in each table.

Nos. VIII.A, VIII.B, VIII.C, VIII.D, and VIII.E (29 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at age 60, by payments as specified in each table.

Nos. IX., IX.A, IX.B, IX.C, IX.D, and No. X. (23 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at ages 30 and 55, by payments as specified in each table.

Nos. X.A, X.B, X.C, X.D, and X.E (21 p.), showing the net values for one thousand dollars of endow. assu. pol. maturing at age 55, by prem. as specified in each table.

Nos. XI., XI.A, XI.B, XI.C, XI.D, XI.E, and No. XII. (26 p.), showing net values per one thousand dollars of endow. assu. pol. maturing at ages 35 and 50, by payments as specified in each table.

Nos. XII.A, XII.B, XII.C, XII.D, and XII.E (18 p.), showing net values per one thousand dollars of endow. assu. pol. maturing at age 50, by payments as specified in each table.

Nos. XIII., XIII.A, XIII.B, XIII.C, XIII.D, XIII.E, and No. XIV. (27 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at ages 40 and 45, by payments as specified in each table.

Nos. XIV.A, XIV.B, XIV.C, XIV.D, and XIV.E (15 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at age 45, by payments as specified in each table.

No. XV. (28 p.), showing net values per one thousand dollars of endow. assu. pol., maturing at age 65, by equal ann. prem. till mortality or previous death.

Nos. XV.A, XV.B, XV.C, XV.D, and XV.E (26 p.), showing values per one thousand dollars of endow. assu. pol. maturing at age 65, by payments as specified in each table.

Part 3 of the work will be very soon completed. The cost of the 3 parts, £42. The typography appears perfect.

In 1871 was pub. in Boston, U.S., 2nd ed. of Prof. E. Wright's Valuation Tables on the combined experience of actuaries (17 offices) rate of Mort., revised and enlarged. The author says :

These tables, so far as they give the net values of ordinary policies, with ann. prems. payable during life, were printed for the use of a few subscribing Cos. in 1853. Very few other than whole-life, or short-term policies were then issued. At the present moment it will create some surprise that some of the Cos. for which these tables were prepared, insisted on maintaining a 3 p.c. reserve, on which account they were cast at both 3 and 4 p.c. . . Since 1853, and especially since 1858, different forms of policy, or modes of paying prem., have been greatly multiplied, requiring not only many new tables for convenience in valuing for reserve, but for settling other important questions of equity necessarily arising out of the great diversities in the conditions of the policies. To this reprint of old tables, a good many new ones that seemed most needed have been added, and a number of others the purpose of which will be presently explained.

ACTUARIAL VALUATIONS. See **ACTUARIAL INVESTIGATIONS.** **BONUSES,** mode of ascertaining. **VALUATIONS** for **SURPLUS.**

ACTUARIES, CONSULTING.—Actuaries of known reputation have frequently a very considerable income from a species of chamber practice, quite apart from the conduct of the business of any particular office with which they may be associated. In the process of legal business all sorts of questions arise regarding the values of life interests, reversions, leaseholds, next presentations, etc., etc.; and the Courts, before making orders for dealing with the same, properly require a valuation to be made by a competent actuary. Then again, vendors as well as purchasers require to know the values of life policies, annuities, life interests, etc., about to be placed in the market for sale. Many books have been pub. professing to give rules and tables to guide in such matters. But the opinion of a man practically conversant with such questions must necessarily stand before all that can be said by rule. He knows the proper deductions and allowances to be made; the proper rate of int. to be assumed; the inclination or otherwise to invest at certain times in certain classes of securities: hence a fee of a few guineas may save as many hundreds. Most persons over-estimate the values of such investments when not acting under competent advice. Some of the problems which come before actuaries in this manner are of great interest.

Many of the smaller ins. offices, having no regularly appointed actuary on their staff, fall back upon the services of consulting actuaries, and reap the benefit of their larger experience at a very small comparative cost.

Mr. James Dodson may be regarded as the first who filled the office of Consulting Actuary. He stood in that relation to the founders of the *Equitable*. De Moivre had

indeed been much consulted in the earlier part of last century ; but chiefly as regarded chances at play.

In the U.S. several of the best known actuaries are entirely consulting, that is, have no fixed engagement with any particular office.

ACTUARIES' EXPERIENCE.—**ACTUARIES' TABLE.**—The Experience Table, 17 Offices (1843), which we in this work call the OLD EXPERIENCE TABLE, is generally designated by one of the above titles by actuaries and writers in the U.S. The Experience Table of 1869, we in these pages, with a view to the avoidance of confusion, call the NEW EXPERIENCE TABLE. The OLD EXPERIENCE TABLE was some years since adopted by the State of Massachusetts as the standard for its State valuations, and is still retained. [AMERICAN MORT. TABLES.] It is very often called the ACTUARIES' EXPERIENCE.

ACTUARIES, FACULTY OF, IN SCOTLAND. See FACULTY OF ACTUARIES.

ACTUARIES, INSTITUTE OF (GREAT BRITAIN).—With a view to the especial training of actuaries to the duties of their calling. [ACTUARY.] The Institute of Actuaries was founded in Lond. in 1847. Most of the leading members of the profession have taken a warm interest in it from the beginning. Its successive presidents have been Mr. John Finlaison, Mr. Charles Jellicoe, Mr. Samuel Brown, and the President now is Mr. W. B. Hodge. A president is now elected every third year ; the affairs are governed by the President and Council.

The Institute consists of contributing members, viz., Fellows and Associates ; and non-contributing members, viz., Honorary Foreign and Corresponding Members. Fellows have the right of attaching to their names F.I.A. ; Associates A.I.A. An Associate who, "for a period of three years, may have been Act. to the Government, or Act., Principal Officer, Manager, Sec., or Assistant Act. to any Life Assu., Annuity, or Rev. Interest So., or who has received a certificate of competency, may be at once admitted as Fellow, without ballot."

The first art. of its consti. sets forth its objects as follows :—

The Institute of Actuaries of Great Britain and Ireland is an asso. founded for the purpose of elevating the attainments and status, and promoting the general efficiency of all who are engaged in occupations connected with the pursuits of an Actuary ; and for the extension and improvement of the data and methods of the science, which has its origin in the application of the doctrine of prob. to the affairs of life, and from which life assu. annuity, reversionary interest and other analogous institutions derive their principles of operation. It embraces as its peculiar province of inquiry all monetary questions involving a consideration of the separate or combined effects of interest and probability.

With a view to the preparation of the younger members for the high duties of their calling, a course of instruction has been indicated by the Council, the completeness of which may be sufficiently judged of by a bare enumeration :

MATRICULATION EXAMINATION.—Vulgar Fractions ; Decimal Fractions ; Logarithms ; Evolutions ; Equations, Simple and Quadratic ; Series, Arithmetical and Geometrical ; Permutations and Combinations ; Binomial Theorem ; Finite Differences ; Geometry ; First Four Books of Euclid. **SECOND YEAR'S EXAMINATION.**—Theory of Logarithms ; Elements and Theory of Probabilities ; Compound Int. and Annuities Certain ; Tables of Mort. ; Construction of Auxiliary Tables ; Annuities and Assu. on Lives ; Annuities and Assu. on Survivorships ; Miscellaneous questions. **THIRD YEAR'S EXAMINATION.**—*Life Assu. Finance* : Construction and Graduation of Tables of Mort. ; Existing Tables of Mort., the mode of their Construction and their respective Merits ; Methods of determining the Surplus in an Assu. Co., and of distributing it amongst the Assured. *Legal Principles* : Acts of Parl. ; Charters of Incorp. ; Deeds of Set. ; Partnerships, Lim. and Unlim., Powers and Duties of Persons constituting them ; Policy considered as a Contract ; Probates and Letters of Administration ; Assignments ; Personal Representatives : Bankruptcies. *Statistics* : Methods for the Arrangement and Collection of Data ; Tests of Accuracy ; Preparation of Abstracts and Reports ; General System of the Country's Finance ; Funded and Unfunded Debt, and Fiscal Arrangements ; Taxation. *Currency, Banking, and Investment* : Currency, metallic and paper ; Nature of Banking—Bank of England, Private and Joint Stock Banks ; Bills of Exchange ; Comparative Value of Securities ; High and Low Prices ; Fluctuations in the Rate of Interest. *Miscellaneous* : Book-keeping ; Auditing ; Valuation of Marketable Securities ; and Approximate Calculations.

In the preparation of this work we have kept before us the preceding requirements. Some are of course altogether beyond our range.

The Institute has its own organ : the *Journal of the Institute of Actuaries and Assu. Mag.* pub. quarterly. [ASSURANCE MAG.]

In 1867 an attempt was made to found an Inst. of Actuaries in the U.S., but it did not proceed.

ACTUARIES, LONGEVITY OF.—We think the profession of an actuary is one that should peculiarly conduce to longevity. We do not find that any special records have been kept. We have compiled a few instances of ages at death, at the moment of going to press, only as a nucleus.

Griffith Davies	67	Mr. Harris (of the <i>Sun</i>).....	46
Professor De Morgan	65	Mr. Arthur Morgan	69
John Finlaison	77	Mr. W. Morgan	54
Benjamin Gompertz	85	Dr. Price	68

ACTUARY.—Originally a public officer in the Roman Courts of Justice, who drew up writings, contracts, etc., in presence of the magistrate, whence his name, from Actus, *an instrument*. Actuarii also kept the military accounts of the Romans. The Clerk who registered the acts and constitutions of the convocation in the assemblies of that body was termed *actuary*. The officers appointed to keep Savings Bank accounts were formerly termed actuaries. Some dictionaries include short-hand writers and registrars of public

bodies under the term. An actuary, as now understood, is a person who is trained to apply the doctrine of mathematical prob. to the affairs of life. The classes of problems with which he has to deal embrace all monetary questions that involve a consideration of the separate or combined effect of int. and prob.

An actuary is now regarded as a necessary officer of every asso. transacting life, annuity, or rev. bus. He may be either a resident actuary, a term applied to persons holding a fixed appointment with any particular asso. ; or he may be a consulting actuary, whose services are at the disposal of any person or asso. requiring the same. [ACTUARIES, CONSULTING.] The title of actuary can scarcely be said to properly belong to any person in Gt. Brit. who is not a member of the Inst. of Actuaries of Gt. Brit. and Ireland, or of the Faculty of Actuaries in Scotland.

Mr. Wm. Morgan was probably the first resident actuary appointed. He became act. of the *Equitable* in 1774. Dr. Price addressed the following remarks to that So. on the duties and the importance of the office of actuary.

There are no questions the solution of which requires a stricter attention, or greater skill in investigation, than some in the doctrine of assu. Difficult questions are sometimes brought to the So. ; and the Directors, not being themselves mathematicians, are under a necessity, in making their demands, of being governed by their Actuary : and should he happen to be unqualified, he must make mistakes, and either the public or the So. will be injured. In short, the So. can scarcely be sensible enough of the importance of both abilities and probity in the servants it employs ; nor therefore of the particular reason there is for guarding their places against the applications of candidates who in any future vacancies may endeavour to intrude themselves by their connexions or influence.

It was in 1819 that the profession of the actuary came to be specially recognized by the Government. This came about in two forms. First by the appointment of Mr. John Finlaison to the office of actuary to the Commissioners of the National Debt ; and second, by enacting (59 Geo. III. c. 128, sec. 2) that the Tables and Rules of all Friendly Societies should be "approved by two persons at least, known to be professional actuaries, or persons skilled in calculation," as fit and proper, according to the most correct calculation of which the nature of the case would admit. (See 1846.)

In 1826, Mr. Babbage said in his *Comparative View*, speaking of the actuaries of the then offices :

The degree of knowledge possessed by persons so situated at the different Inst. is exceedingly various, passing through all degrees, from the most superficial acquirements, derived merely from the routine of an office, up to the most profound knowledge of the subject.

These differences in degree of attainments are not peculiar to the profession of the actuary.

The requirement of an actuarial certificate to the Tables, etc., of F. Sos. enacted in 1819, was superseded by the law of 1829 ; but in 1846 there was enacted the 9 & 10 Vict. c. 27, sec. 13 of which provided as follows :

After the passing of this Act, the Reg. of F. Sos. in England and Scotland shall not certify the rules of any F. So. estab. after the passing of this Act, for the purpose of securing any benefit depending on the laws of sickness or mort., unless such So. shall adopt a Table which shall have been certified to be a Table which may be safely and fairly adopted for such purpose under the hand of the actuary to the Commissioners for the Reduction of the National Debt, or of some person who shall have been for at least five years an actuary to some Life Ins. Co. in Lond., Edin., or Dublin, and the name of the actuary by whom any such Table shall have been certified shall be set forth in the rules, and printed at the foot of all copies of such Tables printed for the use of the So. (See 1850.)

By the 13 & 14 Vict. c. 115, the enactments of 1819 and 1846 are modified, and the employment of an actuary in relation to F. Sos. is rendered optional, except that the Reg. is not to grant a "certificate to any So. assu. to any member thereof a certain annuity deferred or immediate, unless the Tables of Contributions payable for such kind of assu. shall have been certified by an actuary as aforesaid, or furnished by the Reg." But if the Rules and Tables *were* certified by an actuary as provided by the act of 1846, then the So. was to be designated a "certified" So.

By 15 & 16 Vict. c. 80 (1852), an act to abolish the office of master in ordinary of the High Court of Chancery, and to make provision for the more speedy and efficient despatch of the bus. of the said Court, authority is given (sec. 42) to any judge of the Court to obtain the assistance of "actuaries or other scientific persons" the better to enable such Court or judge to determine any matter at issue in any cause or proceeding, and to act upon the certificate of such persons. Under this authority the opinions of actuaries are very constantly required by the Court.

In 1853 a good deal of attention was drawn to the subject of the training and qualification of actuaries, by reason of the Select Com. on Assu. Asso., which sat in that year, taking some notice of the question.

Mr. Samuel Brown, in a paper read before the Inst. (*Assu. Mag.* vol. iv., p. 93), took occasion to say :—

I apprehend that the real bus. of the actuary is the reasoning on all events to which the mathematics of prob. can be applied, and reducing the conclusions to a form in which they can be practically used for the public benefit. His study is the doctrine of averages ; and though his functions have been hitherto confined in a great measure to subjects relating to the assu. of human life, there are evidently many other topics to which in time his attention ought to be directed. The discovery of the mathematical laws of events will eventually be recognized as the sole means of bringing uncertainty to certainty, and out of irregularity deducing order. Whilst men depend wholly on their individual experience and skill, without consulting the laws deduced by mathematics from a large collection of

facts, they will often be astonished, as they frequently are now in Fire and Marine Assu., by fluctuations which upset all their rules of practice, but which the mathematician, if he had been furnished with the previous results of their experience, would have predicted with almost unerring certainty.

Dr. Farr, in the Twelfth Ann. Rep. of the Reg.-Gen., pub. that same year, said :

The whole commerce of the country turns on contingencies which demand the application of scientific observation and calculation ; and as English agriculture has its chemists, English commerce must, to keep pace with it, ultimately employ actuaries to calculate the risks which are now only roughly guessed at ; and thus extend the sphere of an important class of scientific men, at present almost peculiar to this country.

And then turning to the present rather than the future, added the following :

There is so much of peculiarity in every Assu. So., and such skill required in determining what charge should be laid on the net premium, what reserve should be laid up, what constitutes the safety of a particular Office, what should be sacrificed to extend the transactions, what should be strenuously resisted to save a So. from imminent danger or insolvency, and what should be adopted to give families the greatest benefits, the public the greatest confidence in Ins. Sos.—as demand from the actuary great technical and mathematical skill, besides integrity, consummate judgment, courage and prudence.

In the same year Mr. H. W. Porter read before the Inst. of Actuaries an able paper *On some points connected with the Education of an Actuary* (*Assu. Mag.* vol. iv., p. 108). In the preparation of the present work we think it will be found that we certainly have not exceeded the scope of inquiry which the author of that paper considered should form the groundwork of the education of an actuary. We commend the careful study of that paper to all who contemplate entering into the profession. We content ourselves with the following extract here :

The model actuary, then, as a statist, collects and arranges the materials for his mort. table ; as a mathematician he constructs, accommodates, and corrects it, according to scientific principles ; and from this course he calculates his Tables of annuities and of prems. His knowledge of the nature of diseases, and of their effect upon certain constitutions and under different conditions, enables him to co-operate with the physician ; and thus the medical knowledge of that officer is combined with the statistical element in the hands of the actuary, and the knowledge of both is thus made practically useful. His legal knowledge, if sound, may save the Co. much expense—his sphere of usefulness is enlarged, and he becomes a valuable coadjutor of the legal adviser of his Co. As a scholar, the actuary is continually in request. As a man of business his services are invaluable. In the term "business" I include a knowledge of Finance.

Mr. David MacLagan, in his address to the Actuarial So. of Edin., in 1867, said :

I claim for the profession of an actuary a very high place indeed. Measured by the issues which depend upon its accurate details, and still more upon the soundness of the principles on which these details proceed, the importance of our profession may be stated in very strong terms. It deals with enormous figures in finance, and it is entrusted with the interests of generations of men. It concerns itself with the minutiae of apparently trifling matters of routine, with fractional and almost infinitesimal considerations ; but it also manipulates and fructifies gigantic sums, and apports them periodically among thousands of recipients who are literally helpless in its hands.

The charter of incorp. of the Faculty of Actuaries of Scot. granted 1868, thus sets forth the duties of an actuary :

Firstly, to take care that the inst. under his charge, or which may at any time desire his opinion and advice, is founded on a safe basis, both as regards the rate of mort. assumed for any particular country, class, or sex, and the rate of int. at which it may be calculated the money entrusted to the care of such inst. can be safely improved ; secondly, to ascertain from time to time, as the inst. makes progress, by appropriate calculations, whether the rate of mort. actually experienced, and the rate of int. realized, are in accordance with the data assumed : for the performance of these duties it is evident that not only a sound knowledge of mathematical principles is required, but also the practical application of financial judgment and experience : . . . in addition to the requirements of Life Assu. Inst., the profession of Actuary is largely called into requisition, in the same manner as that of advocate or barrister, in advising and directing the public in regard to a great variety of pecuniary interests, frequently involving interests of large amount.

The Life Assu. Cos. Act, 1870, requires an investigation into the affairs of all Asso. transacting Life bus., to be made by "an actuary" periodically ; but does not define who shall be regarded as an actuary for such purpose. We believe the attempt once or twice made legally to define an actuary led to a complete failure. This need not be so. A short act of Incorp. for the Institute might settle this vexed question.

After what has been already said here, it may seem superfluous to add that an actuary must be something more than simply a mathematician. That he must be a mathematician admits of no question ; but with that qualification ever so largely developed, and nothing more than that, he never becomes an actuary in the sense here implied. The other qualifications are sound judgment and enlarged knowledge of business affairs—*sagacity*. The latter can only be obtained with and from experience ; the judgment should be inherent. We will quote from two authorities in point : Mr. Porter said in the paper already quoted :

Those who have been in the habit of seeing that class of cases which arise in the private practice of an actuary, and particularly in that of actuaries of Rev. Ins. Cos.,—and which are of a far higher order than ordinary Assu. Office calculations,—must be well aware that in many cases *judgment*, both as to the treatment of the case, and as to the adoption of results when arrived at by calculation, or the modification of those results, is no unimportant aid to the actuary ; *indeed, cases may and do arise in practice, the result of which untempered by judgment would be absurd.*

Mr. Charles Jellicoe remarked in 1855 (*Assu. Mag.* vol. vi., p. 66) :

From what has been said, it will be apparent that in questions of this kind a great deal of judgment and discretion must always be required from the actuary, and that it is not possible to lay down any general rule which will altogether obviate such requirement.

Hence, and happily, calculating machines can never entirely take the place of men.

ACUTE DISEASES.—Diseases of considerable severity, rapid progress, and short duration, as distinguished from *chronic*, or long-continued diseases. Diseases were formerly distinguished into *morbi acutissimi*, very acute, lasting only three or four days; *morbi sub-acutissimi*, lasting seven days; and *morbi subacuti*, lasting from twenty to forty days.—*Hoblyn's Dict. of Med. Terms.*

ADAMANT FIRE AND LIFE ASSU. CO. projected in 1852, but never attained the honour of comp. regis. The Co. was promoted by Mr. Fred. Lawrence, who first regis. it as the *Alleviator*. Its proposed cap. was £100,000, in shares of £1.

ADAMS, JOHN, pub. in 1787 *The Mathematician's Companion*, or a Table of Logarithms from 1 to 10,860, with an introduction to Decimal and Logarithmic Arithmetic.

ADAMS, THOMAS, was Sec. of *Coal Trade Mut.* and several other Marine Clubs at South Shields, in 1845, and for some years subsequent.

AD INTERIM, *in the mean time*. As ad interim dividends, pending the declaration of ordinary dividends.

ADDISON, COLONEL H. R., was manager of the *Phoenix* Life during the years 1856-7.

ADDITIONS TO BUSINESS.—An Ins. Asso. cannot take up any branch of bus. not orig. provided for in the scheme of its constitution. This was decided in 1824 in the case of *Natusch v. Irving*, see **ALLIANCE F. AND L.** In view of this circumstance, it is usual in stating the "objects" for which an asso. is founded, which in the case of every modern Co. has to be set out in detail in the Mem. of Asso. [**MEMORANDUM OF ASSO.**], to embrace not only the immediate objects of the Asso., but such as may arise in process of time by amalg. or otherwise. Hence the objects of a Life Asso. frequently comprehend the trans. of Fire and Marine Ins. or Accident and Fidelity Guar. bus., although it is only intended at the time to transact life bus. The objects of the Asso. once fixed cannot be altered. [**ALTERATIONS.**] [**OBJECTS.**]

ADDITIONS TO POLICY.—Reversionary Bonuses declared upon Life policies are termed "Additions to Policy." Mr. Charles Jellicoe advanced the following important *query* upon this subject in 1856. *Should not the add. to a policy, as well as the sum assu., be charged with extra prem. where extra risk is incurred?*—adding the following observations:

It is remarkable that this is done in very few offices, even when the add. are actually greater than the sum assu. There can be, of course, no good reason for such a practice; the add. are made on the supposition that the circumstances of the life involved will remain the same. If those circumstances are altered, the office should have compensation for the add. risk incurred by the change, or it must be a loser to the extent of the proper prem. to meet it. *Assu. Mag.*, vi., p. 104.

ADELPHI ASSO. "for the effecting of mut. and the granting of guaranteed assu. on Lives and Survivorships, and the sale of deferred and contingent Life annu. and Endow." This Asso. was projected some years since. It was to have a capital of £500,000, in 10,000 shares of £50. Its preliminary prospectus said:

The prov. committee of the *Adelphi* Asso. having well considered the various existing schemes of Life Assu., are satisfied that there are strong reasons for believing that notwithstanding the large number of similar Inst., an asso. embracing, and extending, upon safe and equitable principles, the various conveniencies which have hitherto been projected, is yet requisite to supply the wants of, and would be appreciated and supported by the public.

This belief was not realized; the undertaking never reached maturity; the scheme bore a strong family resemblance to the *Abacus*. Mr. E. Ryley was its consulting actuary.

ADJOINING RISKS.—In Fire Ins. houses, buildings, etc., standing so near to the particular risks being ins. as to be likely to communicate fire. Property insurable in itself at easy rates may by reason of its contiguity to combustible materials be deemed hazardous. In France the person in whose premises a fire originates is *prima facie* liable for all damage done to adjoining risks.

ADJUDICATION, giving or pronouncing a judgment, sentence, or decree. As adjudicating upon claims; determining or decreeing the amount to be paid. Claims "waiting for adjudication" are those in which all the requirements of the proof have not been complied with.

ADJUST (To).—From the Fr. to make even. To arrange, define, determine, make even, and "settle" the amount payable under a contract of ins. on the occasion of a loss.

ADJUSTER.—One whose profession or bus. it is to adjust. [**ASSESSOR.**] [**AVERAGE STATER.**] [**CLAIM ADJUSTER.**]

ADJUSTMENT.—The term is applied in several forms to the business of Ins. We must deal with it under each head.

In Marine Ins. it signifies the process of ascertaining the amount of the indemnity which the insured, after all allowances and deductions made, is entitled to receive under his policy, and the fixing the proportion which each underwriter is liable to pay. The term "settling," as applied to the adjustment of marine losses, is technical, and sometimes leads to misapprehension; it should be discontinued. Marine losses are usually adjusted by persons specially qualified for the purpose, called average-adjusters, or average-staters, which is indeed a recognized profession. Originally Marine losses were not payable until one month after adjustment. The Marine Cos. after a time adopted the practice of paying within ten days or a week. The underwriters at Lloyd's adhered to the custom of one month, until June 1870, when a discussion was raised, and on a ballot of members, it was agreed to pay one week after adjustment.

The question has arisen whether, if the underwriter received information *after* the adjustment, which altered his views of the *bona fide* character of the loss, and therefore of his liability, he was at liberty to decline to pay. In the case of *Hog v. Gouldney*, which arose in 1745, the adjustment had been made and endorsed upon the policy as follows: *Adjusted the loss on this policy at ninety-eight pounds per cent., which I do agree to pay one month after date.*—*Henry Gouldney*. The plaintiff pleaded that after such adjustments the losses were always paid without further proof, and the Lord Chief Justice considered the endorsement as *a note of hand*, and said the plaintiff had no need to enter into proof of loss. Later decisions have modified this ruling; and in case of fraud the money can be recovered even after payment. The usual form of endorsement on the policy now is "Settled at £———," and signed by the underwriter, or in case of a Co. by the duly authorized officer, or two or more directors.

In Life Ins. the term has no reference to claims.

In Fire Ins. complications equally great with those in Marine Ins. occur, more particularly in relation to "Floating Policies." But such adjustments are usually termed "apportionments," and under that head we shall speak of them. The officer making the apportionment is called an "assessor." [ASSESSOR.]

In Hail and some other branches of Ins. the adjustment of the loss is termed an "assessment," and will be spoken of under that head.

In Cattle Ins. the losses are generally settled through the aid of an "Inspector."

ADJUSTMENT OF RIGHTS OF CONTRIBUTORIES, is a process which arises in the winding up an asso. either voluntary or under the Court. The debts being all paid, the surplus has to be disposed of to the contributories by this process. Cos. Act, 1862, secs. 109 and 133.

ADJUSTMENT OF TABLES OF MORT.—The process of *adjustment* or *graduation* by which a Life Table is made to represent as nearly as possible the progress of a human generation year by year through life, is employed upon the same principle that astronomers "reduce," as it is termed, all their observations to some common event or epoch. "By the term correcting or equating observations for nutation," says Herschel, "is always understood in astronomy the getting rid of a periodical cause of fluctuation and presenting a result, *not as it was observed*, but as it *would have been observed* had that cause of fluctuation had no existence." The same process has to be employed in the construction of Mort. Tables. A simple instance may be furnished. Between the ages of 15 and 25, and indeed up to later ages, the mort. is kept down in towns by the influx of healthy people (chiefly females) from the country: thus in Lond. the annual mort. amongst young women, between the ages named, is only 6 per 1,000; while in the surrounding counties the mort. at the same age is from 7 to 8 per 1,000; and amongst *young men* in Lond., at the like age, it is 8 per 1,000; The solution is found in the fact that healthy young women of these ages go from the country into Lond., and other large towns, and obtain situations, and frequently, if they are taken ill, go back into the country to die. The effect is to make towns look more healthy than the country, at these ages. Mort. Tables, constructed upon extensive data from town and country life, would not be materially affected by such fluctuations. Those based upon town observations only are certain to be more or less so, unless subjected to the processes just enumerated. They would, in fact, exhibit fictitious decrements at the ages enumerated if this "correction"—which implies the preceding processes—were omitted.—*Ins. Guide and Hand-book*.

In 1857, a paper from Mr. Peter Gray on Mr. Gompertz's method for the adjustment of Tables of Mort., was pub. in the *Assu. Mag.* (vol. vii., p. 121), and therein the writer offered the following remarks:—

When an observation has been made for the purpose of determining the mort. which has prevailed during a specific time in the community observed upon, it is usually found that the series of prob. of living a year at the various ages thence deduced is very far from conforming to our ideas of what an exponent of the law of mort. ought to be. Instead of a series exhibiting throughout its extent a gradual and progressive change of value in passing from each term to the next, we have one showing but a faint approach to the desired regularity. This is just what, from the circumstances in which such obs. are usually made, we ought to expect. It is not often that the community subjected to obs. is sufficiently extended to furnish us with such a series of *average* results as can alone fitly figure forth the law of mort.

Now if our object is only to ascertain the mort. which *has* prevailed during the period to which our obs. has been restricted, nothing remains to be done—the series obtained as above is a correct representation of that mort. But there is usually another ulterior object in view. What we generally want is a series to serve as a basis of deductions for the future, and which consequently shall exhibit, not the incidental mort. of a limited period, but the *normal* mort. (so to speak), which would have been found to prevail had the observation been conducted on more extensive bases. Keeping in view then that we have no other means of arriving at, or rather of approximating to the series in question than by subjecting to treatment the series already obtained, it becomes a matter of importance to determine what is the mode of treatment likely to conduct us to the most satisfactory result. Various methods have been devised and employed by computers who have been engaged in the construction of tables for the *adjustment* of their results (for so the operation I speak of is termed), and it is one of these that it is the object of the present paper to explain and illustrate.

The method in question is that which was devised by Mr. Gompertz, and given to the world in the *Phil. Trans.* for 1825. Although so long before the public, it is far from being so well known as it deserves to be. . . .

In nearly all the methods of adjustment heretofore employed, with the exception of Mr. Gompertz's, the object chiefly kept in view has been, simply (doing, of course as little violence as possible to the orig. results), to secure *some sort* of regularity of progression in the series of prob. of living a year; and this without reference to any *law* in accordance with which this progression *ought* to be regulated. Mr. Gompertz, on the other hand, sets out by proposing for our acceptance a principle with respect to

the progression of the rate of mort., which, on its being admitted, leads to the method of adjustment of which we speak.

He then proceeds to explain Mr. Gompertz's Law of Mort., and to expound its formulæ, in which it is not necessary to follow him.

Two able papers *On Interpolation, Summation, and the Adjustment of Numerical Tables*, appear in vol. xi. *Assu. Mag.* by Mr. Woolhouse.

It will have been gathered from the foregoing that various methods of adjustment have been employed. A controversy has recently (1870) arisen between Mr. Woolhouse and Mr. Filipowski, as to the plan which was adopted in adjusting the NEW EXPERIENCE Tables. Mr. Woolhouse said on this occasion :

I have for many years made the adjustment of tables a special study, and the subject is one the investigation of which is beset by formidable difficulties, which still present to mathematicians an interesting field for future research. The particular method by which the New Experience Tables have been adjusted by me, and which I am assured will be practically useful in other departments of science, is mathematically satisfactory in principle, and the manipulation of the same has proved to be both effective and simple in practice, and such as to warrant its general adoption.

Mr. Filipowski advocated a method altogether different from that which he believed had been adopted. We cannot follow the controversy (see *Ins. Record*, December, 1870).

[GRADUATION.] [MORT. TABLES.]

ADLARD, GEORGE, an English gentleman resident in New York. He has represented several English Ins. Cos. doing bus. in the U.S., viz., the *Monarch*, the *Unity*, and more recently the *Queen*. He has written some able papers on historical subjects, and to him we are indebted for the discovery, in the Register Books of the Privy Council, of the controversy between the two first English Fire Offices, which will be found detailed in our HIST. OF FIRE INS.

ADLER, MARCUS N., M.A., F.I.A., Act. of Life department of *Alliance* since 1867. Mr. Adler entered that office in 1857, for the purpose of acquiring a practical knowledge of ins. He had studied under the late Professor De Morgan, at University College, and had assisted a son of that gentleman in the estab. of the Mathematical So. In the *Alliance* he had the good fortune to come under the immediate notice of the then distinguished Act. of the Co., Mr. Gompertz, who discerned and appreciated his attainments. In 1858 Mr. Adler communicated to the *Assu. Mag.*, "Formula for an Approximate Value of Annuities at Simple Interest."

In 1864 Mr. Adler prepared a paper:—*Some Considerations on the Government Life Annuities and Life Assu. Bill*, in which was contained many suggestions of a practical character. He had the satisfaction of seeing that most of his suggestions were embodied in the measure adopted by the Government. The paper is printed in vol. xii. of *Assu. Mag.* In 1865, he prepared a further paper:—*On Government Annuity and Assu. Rates and Regulations*, in which he answered some criticisms on the preceding measure (*Assurance Magazine*, vol. xii., p. 265).

In 1866 Mr. Adler communicated to the *Assu. Mag.* (vol. xiii.) a very interesting memoir of Mr. Gompertz, F.R.S., which we shall have occasion to notice hereafter. It seemed only appropriate that the man who was ultimately to succeed to the chair of that distinguished mathematician should write his memoir.

In 1868 Mr. Adler read before the Institute an instructive paper on "Ins. bus. in Germany;" and in 1870, he read before the Working Men's Club Union (under the presidency of Lord Lichfield), an interesting paper on F. Sos.

ADMINISTER (To).—To dispose according to law of the estate and effects of a person who who has died intestate—that is, without leaving a will. This is done under the authority of a legal instrument called "Letters of Administration." If these be granted to a male, he is called "Administrator," if to a female she is called "Administratrix." Where there are any legal difficulties as to who shall administer, the process is effected through the aid of the Court of Chancery, in what is termed an "Administration suit."

ADMINISTRATION. See LETTERS OF ADMINISTRATION.

ADMIRALTY COURT.—This is a Court of great antiquity. In the reign of Edward I. it was said to have existed "time out of mind." All things arising upon the sea, as causes of merchants and mariners, and whether civil or criminal, were tried before the Lord High Admiral, who was to judge them in a summary way according to the laws of the sea then known. Edward III. appears to have placed the Court upon a better footing in 1357. The rules by which it then came to be governed were the ancient laws, customs, and usages of the sea, including such selections from the laws of Rhodes and Oleron, the Waterrecht of Wisbey, the Hanseatic Ordinances, the Consolato del Mare, the Marine Ordinances of Louis XIV. (1681), and others, which from their natural justice and sound policy obtained generally in the Admiralty Courts of Europe.

Richard II. limited the jurisdiction of the Court. It is probable that previously the Court took cognizance of all causes of a maritime nature, whether arising within the king's dominions or out of them. It would seem to be the proper province of the Court to deal with causes wholly arising upon the main sea, and not within the precincts of any country: so that being out of the reach of ordinary Courts of Justice, they are to be remedied by a peculiar court of their own. The judgeship of the Admiralty was constituted in 1514: the judge being styled the Lieutenant of the High Admiral.

By 2nd of Henry IV. c. 11 (A.D. 1400), an Act was passed : A remedy for him who is wrongfully pursued in the Court of Admiralty. This Act was repealed in 1861.

The High Court of Admiralty was formerly held at St. Margaret's Hall in Southwark. During the plague of London it was held at Jesus College, Oxford ; the principal of that College being judge of the Court. After that it was removed to Doctors' Commons. Blackstone says its proceedings were according to the civil law, and therefore the Court was held with the Superior Ecclesiastical Courts in Doctors' Commons. In later times the judge has generally been an eminent Doctor of the Civil Law. Before the Revolution there appears to have been two judges ; afterwards but one.

At the present time there are two divisions of the Court—the Prize Court and the Instance Court. In the Prize Court the judge has jurisdiction, by virtue of a Commission issued under the Great Seal, at the beginning of every war, to proceed upon all and all manner of captures, seizures, prizes and reprisals of ships or goods which are or shall be taken, and to hear and determine according to the course of the Admiralty and the law of nations. In the Instance Court also the jurisdiction exercised by the judge is conferred by a Commission under the Great Seal. This is a municipal tribunal ; it is a court of record, and its decrees and orders for the payment of money have the same effect as judgments in the Superior Courts of Common Law.

This Court has jurisdiction in cases of private injuries to private rights arising at sea, or intimately connected with maritime subjects. Its jurisdiction in cases of torts is confined to wrongs committed at sea, or at least on the water, within the jurisdiction of the Admiralty. Such are suits for (1) Sea batteries ; (2) Collision of ships, for which there is also remedy at common law ; (3) Restitution of possession of a ship where there is no *bona fide* claim to withhold her ; and (4) Piratical and illegal takings at sea.

In cases of contract its jurisdiction is confined to those of a maritime nature, as (1) Between part-owners of a ship—Equity has a concurrent jurisdiction in this case ; (2) Mariners' and officers' wages—also recoverable by action at law, or before a magistrate ; (3) Pilotage ; (4) Bottomry and *respondentia* bonds ; and (5) Salvage—which is also recoverable by action at law, or a summary hearing before magistrates, or the Cinque Port Commissioners ; (6) Whenever any ship is under arrest by process issuing from the High Court of Admiralty, or when the proceeds of any ship having been so arrested have been brought into the registry, the Court has jurisdiction to take cognizance of all claims and causes of action of any person in respect of any mortgage of such ship, and to decide any suit instituted by any such person in respect of any such claim or causes of action respectively (see 3 & 4 Vict. c. 65).

The Court now sits at Westminster, and its proceedings are still greatly conformable to the Civil Law in conjunction with Marine Customs. There is a Court of Admiralty in Ireland, but the Scotch Court was abolished by 1 Wm. IV. c. 69. The practice of the Admiralty Court in England has been much modified by recent enactments—24 & 25 Vict. c. 10 (1861), and 27 & 28 Vict. c. 25 (1864).

It appears at first a little remarkable that, while so many questions incident to Marine Ins. fall within the jurisdiction of the Admiralty Court, no action upon a policy of Marine Ins. can be brought there. Blackstone shadows forth the reason for this : “and indeed it hath been further holden that the Admiralty Court cannot hold plea of any contract under seal.” This rule, as we have seen, has been modified in recent practice ; but actions on policies of Ins. still have to be brought in the ordinary Courts. [POLICIES OF INS. COURT.]

ADMISSION OF AGE.—The technical process of endorsing on the policy “age admitted” after proof has been supplied. [AGE ADMITTED.] [AGE, PROOF OF.]

ADMISSION OF CLAIM.—In Life Ins., after all the required evidence and proofs have been sent in to the office, and the directors have become satisfied of the *bona fides* of the case, the next process is to “admit the claim,” payable at 3 or 6 months—as the policy shall provide. In Accident Ins. death claims are dealt with in the same manner ; while in cases of non-fatal injury the admission is in the form of a letter to the claimant, telling him to call upon the agent of the Co. where he will find a cheque for the amount, on signing the form of discharge.

ADULTERATION OF FOOD was prohibited in England as far back as 1267. Much attention was called to the subject in 1822, through Mr. Accum's book called *Death in the Pot* ; and in 1855, through Dr. Hassell's book, *Food, and its Adulterations*. In 1836, by 6 & 7 Wm. IV., c. 37, adulteration was made a criminal offence. It is now provided by 23 & 24 Vict. c. 84 (1860), that every person who sells any article of food or drink, with which, to the knowledge of such person, any ingredient injurious to health has been mixed, or sells, as pure, any such article adulterated, and not pure, shall, on summary conviction, forfeit a sum not exceeding £5. On repetition of the offence, offender's name may be pub. at his expense in newspapers. Parochial chemical analysts may be appointed. See Baker's *Laws relating to Public Health*.

ADULTERY : its Effect on Lond. Marriages. Gregory King, who wrote in 1696, gave as one reason why Marriages in Lond. produced fewer children than country marriages, “the more frequent fornications and adulteries.” [MARRIAGE.]

ADULTS, DEVELOPMENTAL DISEASES OF.—These rank as order 2 in the Class of DEVELOP-

MENTAL Diseases, and embrace Paramenia and Childbirth. The deaths in England from these causes show but very slight fluctuations. In 1858, they were 2114; in 1862, 2198; and in 1867, 2461. Over a period of fifteen years ending 1864, they averaged about 118 per million of the population living.

The deaths in this order are limited to females, and in 1867 were 2461. Of these, 5 took place at ages between 10 and 15; 141 between 15 and 20; 361 between 20 and 25; 1006 between 25 and 35; 865 between 35 and 45; 80 between 45 and 55; and 3 between 55 and 65.

In vol. vi. of the *Assu. Mag.* (1856) will be found an abstract of an able paper by Professor A. Buchanan, M.D., *On the Physiological Law of Mort. and on certain Deviations from it observed about the commencement of adult life.*

AD VALOREM, according to value.

ADVANTAGEOUS AND GENEROUS SO., LIMITED: founded in 1711, for Ins. on Marriage. [MARRIAGE INS.]

ADVANTAGEOUS INSURERS, "upon the lives of men, women, and children, for the benefit of themselves and posterity for ever." An asso. under this title was projected in October, 1712, in printed "proposals," after the manner of the time. The following is an outline of the scheme in the projector's own words:

If such an ins. can be estab. as that a man by paying 25s. per quarter, and never more, to a joint-stock for 94 years only, can secure to himself, his heirs, executors, or whomsoever he pleases, upon the decease of the person insured upon, whether himself or any other, from £50, if that life drops the first year, to £75 if the second, and so £25 increase every year, till it comes to £250 or more the 9th year, about which time all payments to the stock will cease, and so every year after for ever £250 to the claimant of each person insured upon who should happen to die, would it not be deemed a noble invention, since every contributor, his heirs, etc., could receive £50 for the first £5 he pays, and about £25 for every other £5 he is out of pocket to the stock, whenever the person insured upon dies; and also have an interest in the joint-stock, so as himself, his heirs, etc., for ever to have liberty to nominate another life to be insured upon, and have a like sum paid unto his family again, when that life drops; and then insure again as before, and so on perpetually, without paying the sums mentioned for more than 94 years, which amounts in the whole but to £47 10s., that any one man will pay to the stock for insuring upon one life, to secure a good estate to his family for all succeeding generations.

The projector continues:

And that such a Co. for Ins. upon lives for the benefit of posterity may be solidly founded, and fairly governed by its own members, more advantageously for all and every one of them than any other yet estab., the author of these papers conceives the following articles and scheme annexed will truly demonstrate to all that peruse them.

A most elaborate scheme, with tables of calculations, was annexed, and there is the following intimation:—The scheme was calculated and the articles drawn up above a year since, but not pub. till now, by reason of the many fallacious projects (before taken notice of and justly put down by Act of Parl.) that were then offered to the public. [L. INS., HIST. OF.]

ADVANTAGEOUS SO.—This So. was constituted out of several Subs. for Birth, carried on at Parr's Coffee House, Broad-street, Ratcliffe, early in 1711. It afterwards amalg. with the *Generous So.* and became known as *Advantageous and Generous So.* [BIRTH INS.]

ADVANTAGES OF INS.—These will be made apparent in many parts of this work; especially under the head of *FINANCE OF LIFE INS.*, and in a selection of notes from various writers under *INS.* and *LIFE INS.*

ADVENTURE.—The sending to sea of a ship or goods at the risk of the sender.—*Lex. Merc.* An adventure is now more generally understood as a speculation in goods sent abroad under the care of a supercargo, to be disposed of him to the best advantage for the benefit of his employers.

ADVERTISEMENT.—Any Co. regis. under Cos. Act, 1862, must give notice by adv. "in some newspaper circulating in the district in which the regis. office of the Co. is situate" before closing the register of members. In all adv. the Co's. name and full title must be inserted.

ADVERTISING.—It has long been a problem in the conduct of the affairs of an ins. asso., What benefit is to be derived from advertising? We think the answer may be rendered as tersely as the question. It familiarizes the name and bus. of the office in the minds of the public—that is all. The bus. resulting directly from advertisements is frequently of such a character that it had better be avoided. Advertisements may be properly regarded as seed sown; the harvest follows at an appropriate distance of time, and can only be effectually garnered by experienced workmen. Mr. Langley put the case very well in his *Vade mecum*:—"Boards and door-plates and wire-blinds are of little value to an agency; and advertisements are scarcely worth the expense, unless backed up by diligence and intelligent activity." The real problem is, How to obtain the largest return for a given sum of money expended? That depends upon the nature of the bus., and a variety of circumstances, regarding which experienced advertising agents may be consulted with great advantage. Advertising is a science.

ADVOWSON.—The right of presentation to a church or benefice. Advowsons are of two kinds; *appendant*, and in *gross*. Appendant is a right of presentation dependent upon a manor, lands, etc., and passes with and as appendant to the same. Advowson in gross is a right subsisting by itself, belonging to a *person*, and not to a manor, lands, etc.

Advowsons are either *presentative*, *collative*, or *donative*. Presentative is where the patron does present or offer his clerk to the Bishop of the Diocese to be instituted in his church. Collation differs from institution in this, that institution is performed by the Bishop upon the presentation of another, and collation is his own act of presentation. An advowson Donative is when the King or other Patron, in whom the advowson of the church is lodged, does, by a single donation in writing, put the clerk into possession without presentation, institution, or induction. Advowsons were formerly mostly appendant to manors, and the patrons parochial barons. The lordship of the manor and patronage of the church were seldom in different hands till advowsons were given to religious houses. Now they are generally divided and dealt with separately. It is in reference to valuations of advowsons that the above definitions become important. [NEXT PRESENTATIONS.]

There are many Tables extant by which advowsons may be valued, as will have been seen by our list of ACTUARIAL TABLES. Of the modern Tables, Willich's has probably been more generally used than any other. But in 1864 Mr. Samuel Brown prepared two valuation Tables, based on a Mort. Table, deduced from observations amongst the clergy over a period of a century—1760 to 1860—made by the Rev. J. Hodgson, late sec. of the *Clergy Mut.*, which will probably supersede all others. The Table as to Advowsons is as follows. That of Next Presentations will be given under that head.

Table showing the present Value of an Advowson ; the Incumbent in possession being at any age from 24 to 90. Interest at 5 per cent.

Age of present Incumb.	Value of £1 clear an. income.	Age of present Incumb.	Value of £1 clear an. income.	Age of present Incumb.	Value of £1 clear an. income.	Age of present Incumb.	Value of £1 clear an. income.
24	3.7367	41	6.1266	58	9.9718	75	14.4408
25	3.8423	42	6.3169	59	10.2324	76	14.6760
26	3.9516	43	6.5122	60	10.4950	77	14.9035
27	4.0639	44	6.7103	61	10.7607	78	15.1212
28	4.1802	45	6.9144	62	11.0272	79	15.3283
29	4.3001	46	7.1223	63	11.2955	80	15.5203
30	4.4251	47	7.3343	64	11.5641	81	15.6950
31	4.5539	48	7.5528	65	11.8324	82	15.8662
32	4.6876	49	7.7763	66	12.1009	83	16.0320
33	4.8232	50	8.0057	67	12.3683	84	16.1921
34	4.9667	51	8.2390	68	12.6358	85	16.3444
35	5.1152	52	8.4772	69	12.9023	86	16.4898
36	5.2685	53	8.7182	70	13.1667	87	16.6255
37	5.4286	54	8.9634	71	13.4314	88	16.7514
38	5.5936	55	9.2102	72	13.6922	89	16.8619
39	5.7644	56	9.4612	73	13.9470	90	16.9543
40	5.9421	57	9.7152	74	14.1977		

Example.—Required the value of an advowson where the age of the present Incumbent is 50, and the net ann. income £1,000 ; value of £1 = £8 os. 1½d. ; therefore of £1,000 = £8,005 14s., and so in proportion for any greater or lesser amount.

Note.—Before using this Table, all charges, etc., must be deducted from the Income of the Living, and it is here that the experience of an actuary is sometimes of great importance.

ÆGIS FIRE AND DILAPIDATION, AND ENGLISH AND CAMBRIAN INS. CO., founded in 1825 with a proposed cap. of £1,000,000. The F. and L. branches appear to have been worked distinctly ; but the capital applied to each. The Dilapidation branch was worked with the former. In the F. branch there was no special feature, except that "floating policies" on goods and merchandize were put prominently forward.

The distinguishing feature of the Co. was its Dilapidation department, and here we shall quote the language of the prosp. :

This branch of the Co. is entirely orig., presenting a mode of ins. of the utmost importance. To indemnify parties from the charge of repairs and dilapidation in buildings of every description is the plan proposed to be adopted.

It is sufficiently obvious that although a small ann. sum can usually be spared from the income of every individual, yet a heavy demand occasioned by the necessity of putting a building in thorough repair, at the termination of the lease, is often the means of involving a tenant for life or lessee in difficulty. The advantages to landlords, patrons of livings, colleges, and other ecclesiastical corps., of having thus the means of compelling tenants and incumbents to ins. against the dilapidation of the buildings they occupy at the expiration of a given period, are obvious.

Then follows a Table of "Dilapidation rates," rates for ins. £100 payable for dilapidation at the end of a Lease, which will terminate in not less than,

40 years and upwards	£1 0 3	20 years and upwards	£3 4
35 "	1 6 3	15 "	4 16 3
30 "	1 14 3	10 "	8 0 3
25 "	2 6 3	7 "	12 3 6

The Table in the prosp. is given for every year from 40 down to 7. The next Table is—Rates for ins. £100 payable for dilapidations on the death of an Ecclesiastical Incumbent, or of a Tenant for Life, or on the death of a person on whose life a Lease depends :

Age not exceeding 14	£1	10	9		Age not exceeding 40	£2	16	9
„ „ 20	1	16	0		„ „ 45	3	5	9
„ „ 25	1	19	9		„ „ 50	3	17	0
„ „ 30	2	4	3		„ „ 55	4	11	9
„ „ 35	2	10	0		„ „ 60	5	11	9

NOTE.—In all cases where Ins. against Dilapidations are effected with this Co. on more than one life, the same principle of calculation will be adopted, but each particular case will be the subject of a special agreement. This department was under the management of Mr. Henry T. Ryde.

Among the officers of this Co. were several persons who have since risen to very considerable distinction. Thus among its consulting physicians were Dr. Birkbeck and Dr. Southwood Smith; whilst one of its Surveyors was Mr. Charles Matthews, afterwards the well-known actor, still living. In the L. department there were no special features. The Co. only continued in existence about two years.

ÆGIS LIFE ASSU. CO., founded in 1848, with an authorized cap. of £160,000, in shares of £20 (power to increase to £500,000). About half the first portion of the cap. was subs. Among the Hon. Directors were "The Chairman and Deputy Chairman for the time being of the *Union F. and L. Assu. Office*," and in the prosp. there was the following:

The objects of the Co. extend also to the transaction of all bus. connected with, or in any way dependent on the contingencies of human life; and the Co. affords to persons assu. the combined advantages of rates of prem. so low as are consistent with perfect safety to the ins., and the most ample security, by its cap. and by its connexion and arrangements with the *Union Fire and Life Office*.

The nature of this arrangement appears in some sort explained by the following note:

Though the transactions of this office are limited to Life Assu., yet in consequence of the arrangements which have been made with the *Union F. and L. Assu. So.* the Directors of this Co. are desirous to obtain Fire Ins. to be effected with the *Union* through the agency of this Co.

The Co. had Tables of BUILDING SO. INS. It made loans to "enable persons to enfranchise Copyhold Land, and thus render it available for building purposes without being subject to the increased fine imposed on improvements." It also accepted lives "temporarily afflicted," and granted loans.

It continued bus. until 1854, and then trans. its policies to the *Mitre*.

ÆSCULAPEAN MEDICAL ATTENDANCE AND GENERAL LIFE INS. CO., projected in 1852, by George Latham Browne, Barrister-at-Law, for securing constant medical attendance to the insured, and for general Life bus. It did not advance beyond prov. regis.

AFFIDAVIT (*I confirm by oath*) in law is an oath in writing sworn before some person who has authority to administer it.

AFFIDAVIT OF FIRE LOSS.—In the early practice of Fire Ins. all claimants for loss from Fire were called upon to make proof of their claim by affidavit on oath, or their affirmation, as the office might elect, and according to the form used by the particular office wherein the claim was made. This again had to be supported and confirmed by a certificate of the minister, churchwardens, and others residing in the parish where the loss occurred. [CERTIFICATE OF FIRE LOSS.]

The *Sun* was one of the offices requiring such affidavit or declaration of loss.

AFFIRMATION (*Lat. affirmatio*).—In English law a solemn declaration made in cases authorized by law, by persons statutablely relieved from the necessity of taking oaths. This relief, orig. granted to Quakers and members of some other persuasions, was extended by the Common Law Procedure Act (1854) to all persons having conscientious objections. A false declaration or affirmation is punishable as perjury.

AFFREIGHT (To).—To hire a vessel. [FREIGHT, INS. OF.]

AFFREIGHTER.—One who affreights or hires a vessel.

AFFREIGHTMENT.—The freight or lading of a ship.—*Cowel*.

AFRICA.—Ships and merchandises from England to the coast of Africa, and at and from thence to our Colonies in the West Indies, etc., were formerly insured with the following clause in the policy:—"Free from loss or average by trading in boats; and also from average occasioned by insurrection of slaves, if under 10 per cent."

AFRICA, WEST COAST OF.—Nearly all Life offices prohibit the residence of their Ins. lives on this coast. It is doubtful if any rate of prem. likely to be obtained would cover the risk incident to such residence. In the *Assu. Mag.* (vol. i. p. 83) will be found a record of the mort. experienced by the officers and crews of Her Majesty's ships employed on the coast of Africa, in each year, from 1840 to 1848 inclusive. The rate fluctuated from a little over 2 up to nearly 8 per cent.

AFTERLIFETIME.—The afterlifetime of men of the age of 30 is 33 years, by the *English Life Table* (No. 1); 33 years is not the precise time probably that any one of that age will live, but the average time that a number of men of that age will live, taken one with another. At birth *lifetime*, and *afterlifetime* are one and the same thing.—*Dr. Farr, 8th Report, R.G.* For more detailed grounds of definition, see EXPECTATION OF LIFE. Dr. Farr again says:

If 1000 or any given number of persons be taken at the age 20, and be followed to the end of life, the years which they live added together and divided by 1000, or by the number of persons, is generally, but incorrectly called the *expectation of life*. I shall call it the *afterlifetime* at 20.

AGAINST TOTAL LOSS ONLY.—This is a form of "Average Warranty" used in Marine Ins. Under it the underwriter is exempted from general as well as particular average, and remains liable only for total loss, absolute or constructive, and for such charges as may be incurred under the "Suing and Labour" clause, to avoid that contingency.—*McArthur*.

AGE means generally a definite period or length of time. As applied to man, age may either mean the whole of his life, or a portion of it. It is usual to divide the whole period of human life into four parts or ages. The first, or infancy, extending to the 14th year (legal infancy extends to 21); the next, or youth, from the 14th to about the 25th; manhood from the 25th to the 50th or 60th; and the last, or old age, filling up the remainder. Ovid ingeniously compares these four ages to the four different seasons of the year. These divisions, however, are in a very great degree arbitrary, and they are frequently changed.

We subjoin the following able remarks from Dr. Pettigrew's *Presumption of Survivorship*, an essay of great merit:

With regard to age, it may be and has been variously estimated. Aristotle, *e.g.*, divided life into three portions, viz., the period of *growth*, the period during which the body remains *stationary*, and that of *decline*; while Varro divided it into five, and Solon into ten. Hyppocrates and the greater number of the ancients adopted a septenary division, and this division has been almost universally adhered to in modern times. Thus the period of growth is made to include—Infancy (*Infantia*), Second Infancy, or Boyhood (*Pueritia*), and Adolescence (*Adolescentia*), the period during which the body undergoes little change; Youth (*Juventus*), and Manhood (*Ætas virilis*); and the period of decline—Old Age and Decrepitude. Infancy, as commonly estimated, extends from the first to the seventh year; Second Infancy, or Boyhood, from the seventh to the fourteenth year; Adolescence, from the fourteenth to the seventeenth or eighteenth year; Youth, from the seventeenth or eighteenth year to the twenty-first, or, more properly, the twenty-fifth; Manhood, from the time the powers corporeal and mental are fully matured until Old Age and Decrepitude supervene. As the epochs which comprise the sum total of existence insensibly glide into each other, it has appeared to me that in framing rules for the regulation of questions of survivorship, we shall gain precision by reducing them to the lowest possible number, *i.e.*, by fixing on such periods only as are characterized by obvious and well-marked bodily and mental changes. With this object in view, I have, on reflection, divided life into four great eras. The first, *embracing Infancy and Childhood*, and extending from the first to the fourteenth year, a period characterized by great bodily development; the second, *comprising Adolescence and Youth*, and extending from the fourteenth to the twenty-fifth year, at which latter period the body may be considered as having attained its full stature; the third, *including Manhood*, and extending from the twenty-fifth to the fifty-fifth, or, it may be, in some instances, to the sixtieth year, which era may be said to be the term of man's greatest mental and bodily activity; and the fourth, or last era, comprehending *Old Age and Decrepitude*, when the body may be considered as gradually giving way. The latter period, I may remark, forms the converse of Infancy and Childhood, when the body rapidly develops.

AGE ADMITTED.—In consequence of the difficulties which sometimes arise in proving the exact age of a person insured under a life policy, *after the death of such person*, the good practice has been introduced into modern Life Ins. of supplying such proof when the ins. is effected, and of getting the age admitted on the policy, by the indorsement of the office issuing the same: after which there can be no further trouble on that head. The *Agriculturist* Life (1851) made it a condition of ins. that proof of age should be furnished in every case, and age admitted. Other offices have talked of such a regulation, but its adoption has not been enforced. [AGE, PROOF OF.] [CLAIMS.] The effect of "age admitted" on the market value of a policy is sometimes very considerable.

AGE AS AN ELEMENT IN INS.—In the early practice of Life Ins., the circumstance of age was not regarded as one of the important elements of the risk. All who were ins. were taken at the same rate, viz., £5 for ins. £100 for one year. This was a rate admitting of some latitude. It was only when a MORT. TABLE was constructed that the means of measuring the chances of life as determined by age were provided. It will be seen that the Roman law-givers without a mort. table—for no writer has yet contended that they had one—made some very close approximations. The early traders in Life Ins. here did not enter upon such distinctions of detail. We shall treat of these subjects more at large under head of ANNUITIES, LIFE INS. We only desire at this point to fix upon the mind the importance of the epoch when age became recognized as an important incident of Life Ins.

It is not only in Life Ins. that the question of age enters. In MARINE Ins. ships are classed, if classed at all, for a certain number of years. An experienced underwriter understands the various phases in the life of a ship—aye, the influence and incidents of climate—the consequences of undue wear and tear, even as a physician estimates corresponding circumstances upon the human being. Some day shall we not include in our Ins. Library the "Life of a Ship from an Underwriter's Point of View"?

In ACCIDENT Ins. certain limits of age only are of consequence. No office that understands its business will grant Ins. on lives under 18, or continue them on lives over 60, except at a very largely increased prem. or otherwise than exceptional cases.

In CATTLE Ins., and in CARRIAGE ACCIDENT Ins., age may become an important element in estimating the risk. It is sometimes so in STEAM BOILER Ins.

Returning to Life Ins., some points have to be specially noted. The Life offices in Gt. Brit. always accept lives at the age next birthday. It is probable that, from this cause (allowing for selection against the practice), the lives on the books are on an average some four months younger than they nominally stand at. In the U.S., the nearest birthday is adopted for fixing the age or prem. To be exact, 183 days are allowed after last birthday—after that, the age ranks for next birthday. In that case the lives should be on an

average exactly of the age at which they stand in the books of the Co., excepting always in the cases of add. for impaired lives. [AGE, PROOF OF.]

Dr. Ward, in his *Medical Estimate of Life for Life Assu.*, says, regarding age :

The medical referee has nothing to do with actual proof of age, but only to remember that it is relative rather than positive; and that some persons from inherent weakness of constitution, bad habits, or other exhausting causes, grow old before the age of 40, while others far advanced in years are virtually young as regards effective performance of function and vigour of constitution. *Where any great discrepancy exists between the real age and that apparent in the aspect, gait, and force*, it will be necessary to ascertain if possible the cause of such, or, at any rate, to conduct a more searching examination as to health and habits.

AGE ASSU. CO., founded in 1851, with an authorized cap. of £100,000, in 10,000 shares of £10. The prosp. said, "It has been calculated that not more than one in ten of the heads of families amongst those likely to ins. have yet availed themselves of the advantages of Life Assu.; and considering the fact, and the continued increase of pop., there is ample bus. for many new offices." Again, "The large profits which have been made by existing Cos. have been produced by a very limited amount of bus. compared with what might be obtained if more liberal principles were acted upon by the offices." Among the features of the Co. were these: A surrender value of "at least one half the prems. paid" was to be given on whole-term pol. Lapsed pol. might be renewed, "without proof of health," if the omission to pay had been "accidental." *Married lives were to be ins. at lower prems. than unmarried ones.* Policies indefeasible. Deposit Ins. granted. Policies payable to nominee of Ins., "thus saving the great expense and delay of attending the proving a will or obtaining letters of administration." It also paid "int. on all policies from the death of the Ins." Finally (said the share prosp.), "there can be no doubt that the public will gladly avail themselves of these, and of the other advantages offered by this Co., and as they will give an ample profit to the office, a large and very remunerative bus. must be obtained."

A considerable portion of the cap. was subs., but an obstinate or short-sighted public did not see all the advantages offered by the Co., or if it saw them failed to come in. The Co. in 1856 amalg. with the *Engineers*, and was afterwards known as the *Engineers and Age*; and in 1859 that Co. amalg. with the *English and Irish Church*, which see. Mr. William Owen was consulting actuary.

AGE, OLD. See LONGEVITY, and OLD AGE.

AGE, PROOF OF.—It is one of first essentials in Life Ins. and annuity transactions that the real age of the lives interested or put forward as the basis of the transaction should be correctly stated. In the case of endowments and reversions, and indeed in all contracts relating to the duration of life, the present age must become an important consideration as influencing not only pecuniary values, but even the very acceptance or rejection of the proposal.

In Life Policies there is generally a condition to the effect that reasonable proof will be required of the date of birth, unless that fact shall have been previously estab. and the "age admitted." [AGE ADMITTED.]

The usual evidence tendered is a baptismal certificate, extracted from the parish books by the officiating minister; or, in the case of Dissenters, of an extract from the registers of births and baptisms kept by those bodies; or, in the case of Jews, from the register of births and circumcisions kept at the synagogue; in every case signed and certified as a true copy, by the officer to whose custody the original is entrusted.

Parish registers are not evidence of the time of birth, but of baptism only; since it is not the duty of the minister to register the former. A person may be baptized when considerably advanced in years; many registers do profess to give the date of birth, and where they do such a circumstance should be regarded.

Since 1837 in England the General Registration Act has been in force. It will soon begin to bear fruits in the direction we are now speaking of. Similar Acts have since been passed for Scotland and Ireland. [GENERAL REGISTRATION.]

When the registers, under the old system, do not contain the necessary proof, recourse must be had to secondary evidence; such is the production of an entry in the family Bible or Prayer-book, or even in an almanack. A statutory declaration made by some member of the family or other person who can speak from personal knowledge of the fact testified will sometimes suffice.

Mr. Bunyon says :

It is notoriously true that evidence on this point is often very difficult to obtain; as, for instance, in the case of children which have been born abroad, or those of dissenters, of whose baptism no evidence is preserved; or where they have been privately baptized, and no entry made in the parish books; or where the books themselves—and this is especially common in Ireland—have been imperfectly kept. After the death of the party the proof becomes doubly difficult. Secondary evidence which might have been suggested is then lost.

It does not follow that because the evidence is difficult to obtain, that it should therefore in every case be dispensed with. Much must be left to the discretion and good faith of the officers of the company in which the life is insured.

Mr. W. T. Thomson speaks upon the subject as follows. (Proof sheets):

It has been the practice among some offices to require proof of age at death, if not previously afforded. This we conceive to be most unjust; it ought to be given or required at the commencement

of the contract, and ought never to be delayed till a claim arises; both assurer and assured are wrong in not attending to this, but more particularly the office, if they consider themselves entitled to require it at death. One case has come under our notice lately, where proof of age was required thirty-two years after the policy was effected. The gentleman had been in the service of the Hon. East India Company, and it was discovered that in some official declaration to them he had made himself out four years older than stated to the office. The parties could procure no evidence to show that this was wrong, though they felt morally convinced that it was so, and were obliged to submit to a deduction from the sum assured. The amount assured was £6000, and the difference of premium, with compound interest, amounted to upwards of £2000, which the office held themselves entitled to deduct at settlement; but they did not insist upon their full rights, and gave a deduction of one-half. Still the case, although hard enough on the representatives, might have been worse, as the policy could have been reduced altogether, on the ground of mis-statement in the original proposal. Our advice is, that evidence of age should always be produced at first.

It is usual, where the mis-statement in age is believed to have been accidental, to rectify the matter by deducting from or add. to the sum ins. No more reasonable method can be devised.

AGE, "PUT UP."—In the case of impaired or diseased lives, it is usual where they are taken at all to make an add. of years, intended to be equivalent to the degree of impairment in each particular case. This is termed "putting up" the age. In actuarial valuations all such cases require special treatment. [DISEASED LIVES.] [VALUATION.]

AGENCY.—Agency in a legal sense implies legal duties and responsibilities. These we shall speak of generally under AGENT.

AGENCY COMMISSIONS.—As most of the Ins. Asso. other than Marine Cos. obtain the greater proportion of their bus. through the introduction of their agents, it follows that a commission must be allowed to such agents for their services. The rates of commission vary not only with the classes of bus. transacted, but in some instances amongst the offices carrying on the same bus. It must be understood therefore that the following are only approximate rates:—

Fire Ins. usually 10 p.c. on the prem. both new and renewal, with a procuration fee in add. for new policies. When the duty on Fire Ins. was in force, some offices allowed agents 2½ p.c. on the duty.

Life Ins. usually 10 p.c. on the first prem. and 5 p.c. on renewals. District and general agents have larger allowances to cover expenses and time employed in their duties.

Accidental Ins., generally 10 p.c. both on new prem. and renewals.

Glass Ins. 12½ p.c. on new prem. and 10 p.c. on renewals.

Hail-Storm Ins. 10 p.c. on new and renewals.

Cattle Ins. 12½ p.c. on new and 10 p.c. on renewals.

Steam Boiler Ins. 10 p.c. on new and 5 p.c. on renewals.

On *Marine Ins.* there is a brokerage of 5 p.c., and a discount for cash paid within a certain number of days, frequently 10 p.c.

The foregoing commissions relate to ins. in England. On the Continent of Europe, and especially in France, the commissions range much higher. But the agents generally give up their whole time to the bus., and become much more proficient than ordinary agents in Eng.

In the U.S. the commissions are much the same as in England. But there also the agents confine their attention solely to ins. bus., often acting for several large and important Cos. at the same time, and making princely incomes by reason of the enterprise they throw into the bus. [BROKERAGE COMMISSION.]

The practice of giving commissions for the intro. of life bus. was first introduced early in the present century, and then only by one or two of the more enterprising offices. Mr. Francis Baily, writing in 1810, thus expresses himself on the subject:—

Many of the public cos. who do not make any return of the profits to the assured allow a *liberal prem.* (generally 5 p.c. on the payment made) to any person who will procure an ins. to be effected at their office; and this commission is also allowed to any person who makes the *annual* payment, *provided it be not the party himself*!! An artifice which is easily seen through: but which opens such a door to fraud and imposition that it cannot be too severely reprobated. And however much it may be sanctioned by the Directors in their *public* capacity; we are all aware what their emotions would be if they discovered any of their tradesmen tampering with *their own* servants in this opprobrious manner, since they must well know who would eventually pay for it. I omit to give the names of those cos. who have adopted this nefarious practice, under the hope that such a mean and improper artifice will not be encouraged in future.

There are Life Offices which have never adopted the commission system, viz., the *Equitable*, *Lond. Life*, *Metropolitan* and *Mutual*; and there are some, as the various Legal Ins. Offices, which have no agents in the strict sense of the term, but allow a commission to all solicitors who introduce bus. [solicitors in the English, not the American sense.] Some of the non-legal offices also allow a commission to solicitors intro. bus., whether agents for the Co. or not. Several other offices, as the *Economic* and *National Provident*, have been contemplating the abandonment of the agency system; but we believe have come to no actual decision to that effect.

AGENDA.—Lat. *Things to be done*. Hence the name of the book used by the Chairman of the Board. Most Ins. Asso. have "agenda books" prepared in relation to any special points in their bus., so that the board agenda assumes the character of a current report on the position of the asso. A most excellent method.

AGENT.—A person appointed to transact the business of another.—*Law Dic.*

AGENT, DUTIES AND RESPONSIBILITIES OF.—In all questions arising upon the acts

of agents, it is a settled rule of law that such acts are only binding upon the principal, *to the extent of the agency or delegated power*; and for any such act, the power may be either *express or incidental to the office conferred*. The employment of an agent in any particular capacity gives the necessary authority to act under ordinary circumstances only. If an emergency occurs, an act of agency in excess of authority is upon the agent's own responsibility, and he must take the chance of the approval or disapproval of his principal. So an action may be brought against an agent who, by making an inaccurate statement as to the extent of his authority, induces any person to enter into a contract.

While the principal duties of an ins. agent are to obtain applications to ins., and to receive and remit the necessary prem., other duties often for convenience devolve upon him. The powers and responsibilities of an agent are hence frequently considerable. . . . As a rule the agent can only enter into a temporary contract pending the decision of the Co., such as the accepting a Fire Ins. risk by deposit receipt until the office has determined upon the proposal. Where an agent is publicly advertised and officially accredited as the agent by the Co., he is assumed by the public to possess the powers customarily entrusted to Ins. agents. It is therefore essential that he should scrupulously keep within the instructions issued for his guidance.—*Ins. Agent*.

Persons acting in the capacity of agents for Ins. Asso. must closely follow the instructions of their principals (the asso. and its proper officers), and by no means attempt to exceed the limits of the delegated authority. They cannot bind the Co. so as to alter the conditions of any contract of ins. or revive a lapsed policy without the express previous approval of the Directors; and cannot involve it in any fresh liability by pledging it to any new or additional ins. contract. Neither are they empowered, without express authority, to receive notices of assignment, notices of claim, or other notices on behalf of the Co., which shall be binding upon it.—*Bunyon*.

In the case of *Acey v. Fernie*, an agent issued a receipt after the lapsing of a policy, such receipt bearing on the face of it a clause to the effect that if the receipt was not taken up within 15 days of the prem. becoming due, it must be returned to the office, "as after that period, the ins. being cancelled, the several receipts will be of no avail." It was held that the agent had no authority for what he had done, and that the receipt proved it.

An agent cannot delegate his rights to another so as to bind the principal, unless expressly authorized to nominate a sub-agent.

The insured is liable for any misrepresentation or concealment made by an agent acting under his orders, and who is in any wise instrumental in procuring the ins.; and the concealment of any material fact known to the agent, even though not known to the insured, may avoid the contract. This principle was settled in the case of *Fitzherbert v. Mather*, by Lord Mansfield in 1785; and by Lord Ellenborough in *Gladstone v. King* in 1813. They were both Marine Ins. cases. Similar decisions have been given in the U.S. If the agent of the office act also as agent of the insured in effecting the ins., even an unintentional mis-statement through such agent may be a breach of warranty. This was decided by Lord Lyndhurst in *Parsons v. Bignold*, 1846.

When an agent undertakes to obtain an ins. for a third party, he should execute the commission with diligence, for he may be liable to an action for neglecting to do so; and this is equally true whether the party undertaking the commission is an ins. agent or not, and although he may act gratuitously in the matter, as was settled in the case of *Wilkinson v. Coverdale* (1793). Should a discretion be allowed him, he will be liable if he deals with asso. or persons who are not responsible; and the measure of his liability will be that of the insurers. Should he be unable to effect the policy, to prevent any right of complaint or liability attaching against himself, he should give notice of his inability to the intending insurer.

In the case of *Linford v. The Provincial Horse and Cattle Ins. Co.*, which came before the Master of the Rolls in 1864, it was held that an ordinary local agent of an ins. co. is not, without special authority, authorized to bind the Co. by a contract to grant a policy. The facts of the case will be given in more detail in the hist. of that particular Co.

The power of a general agent for a mercantile company must be ascertained by the usage of the trade; and the mode of transacting bus. in that department in which he is employed will, in the absence of express directions, often determine a doubt as to the liability of the principal. The principal officers of an Ins. asso., such as the managing director, sec., or actuary, fill the character of general agent, and possess all such powers as may be necessary for enabling them to conduct the business of their offices. They may be responsible for the fraud of the Co., and for false accounts issued by it, in like manner as directors may be, and that not only in damages at common law, but penalty by statute.—*Bunyon*.

As between the agent himself and the Co. if the directors appoint him, and allow him to act as agent of the Co., and he does so act *bond fide*, and without notice of any irregularity in his appointment, the Co. will be liable to him for his salary, although he may not have been appointed precisely in the manner prescribed by the regulations of the Co. This was estab. in *Browning v. Great Central Mining Co.*

Mr. Lindley, reviewing this and other decided cases, offers the following important observations:

These cases, it is submitted, warrant the proposition that if the directors of a Co. permit a person to act as its agent in matters within the scope of the bus. of the Co., and in matters in which the directors have power to act by an agent, such person, whether irregularly appointed or not, is, as between the Co. and third parties, dealing *bond fide* with him, without notice of his warrant of proper authority, the agent of the Co. for all the purposes for which he is employed. *But his authority does not extend beyond these limits*; and the above proposition and the cases supporting it are in no way invalidated by others in which Cos. have been held not bound by acts done by their agents, when acting beyond the limits set by the nature of their employment.

In the event of an agent subs. a policy of Marine Ins. on behalf of an underwriter for a sum in excess of a limitation imposed upon him by the latter, it has been decided that the underwriter is not liable for any portion of the sum affixed to his name, even although the insured be ignorant of this particular restriction, *provided it is notorious in the place where the contract is entered into that some limitation is imposed by underwriters upon their agents*. This was so determined in *Baines v. Ewing*, Exchequer, June, 1866, a Marine Ins. case.

It is seen therefore that the saying—almost a proverb—that the principal is liable for the acts of his agent—requires a very large amount of explanation and qualification.

It is above all things the duty of an agent to keep regular accounts of all his transactions, and to pay over in due course all monies received by him on behalf of his Co. Should he mix the monies received by him on the agency account with his own, paying them to the same account with a banker, he must bear the loss of the failure of the latter. This was settled in *Massey v. Banner*; and he may even become liable for interest on a balance when improperly retained. Should he presume to speculate with the sums received, he will be liable to account for the profits; and such investments even in stock may be subject to a specific lien on the part of the principal. He will not, however, be liable for unavoidable losses, as the failure of a banker in whose bills he may have made a remittance, or in whose hands, in the absence of directions, he may have deposited the money received to a separate account (*Massey v. Banner*); or where he is robbed of the specific monies, whether the felony is committed in his house or upon his person.—*Bunyon*.

These rules also generally apply to agents of Friendly Societies. In the U.S. the powers of agents are much larger in some cases, as they not only accept Fire risks, but fill up blank policies supplied them for the purpose. Their responsibilities generally follow the law here laid down.

AGENTS' BALANCES—Comment is frequently made at the ann. meetings of Ins. Asso. as to the largeness of the "agents' balances" as shown by the accounts submitted. In a great measure the complaint results from the want of knowledge of the persons making it. The system upon which most Ins. offices proceed is to debit the agents at the end of each month with the renewals *falling due in the course of the next succeeding month*. The policy-holders have in some 15, in most 30 days' grace for payment of prems.; and the money does not come into the hands of agents until the policy-holders take up their receipts. The agents having received the prems., should at the earliest moment remit to the office, that the accumulated sums may be placed at int. by the asso. The system could be altered by adopting a system of "renewal suspense account."

AGENTS, KNOWLEDGE REQUIRED BY.—With agents of ins. asso. the proverb that "knowledge is power" applies with peculiar force. The man who knows most of the theory and practice of the particular branch of ins. which he is engaged in advocating, should, all other things being equal, be the most valuable agent to his particular Co. In add. to a general knowledge of the bus., the agent requires to know not only every point concerning his own office, but also a great deal concerning others; by these means only will he be able to make way in these days of increasing competition. It is within the scope of the present work to afford much of the general information spoken of; while it also affords much information concerning individual offices—not derived from the offices themselves, but from altogether independent sources—"never before made public." We enumerate in a separate art. the chief pub. which have been specially addressed to agents. Ins. literature generally abounds in the moral elements, but is wanting in facts. The facts will be supplied in the present work.

AGENTS, LITERATURE FOR.—Numerous pub. have of late years been specially addressed to agents with a view to their encouragement and aid. The following may be specially mentioned as among the more prominent:

1848. Agents' Hand-book of Life Assu. and a few remarks on Fire Ins.

„ Life Assu. Record, intended more particularly for the use of provincial agents of assu. offices of Lond.

1849. Agents' Hand-book of Fire and Life Ins. 2nd ed.

1852. Ins. Agents' Assistant. Popular Essay on Life Assu. Gilbert Currie.

1854. Life Agents' *vade mecum*, and practical guide to success in Life Assu. bus. J. Baxter Langley.

1857. Insurance Guide and Hand-book. Cornelius Wakford. 2nd ed. 1867. [Layton's and Goodsell's.]

„ Life Ins. Agency, Practical Instructions. John Brokenshir.

1869. Handy Book for Life Ins. Agents. H. R. Sharman. 10th ed.

1870. Practical Aids for Life Ins. Agents. Philip Sayle, jun. 2nd ed. 1871.

1871. The Life Agent, by the same author. [Layton's and Goodsell's.]

In the U.S. are some excellent pub. addressed to ins. agents ; Mr. C. C. Hine, of the *Ins. Monitor*, pub. the following :

1. *Hine's Instruction Book for Agents*. 2. *Agents' Advertiser*. 3. *Life Agents' Aid*, by Henry W. Smith. 4. *Agents' Monetary, Life, and Valuation Tables*, by D. P. Fackler, actuary. 5. *The Duties of Agents of F. Ins. Cos. in regard to losses* (a most excellent publication). 6. *Agents' Manual of Life Assu.*, by Dr. Fish.

The Messrs. Goodsell, of the *Spectator*, pub. the following : 1. *Practical Hints to Life Agents*, by an Old Workman. 2. *Agents' Manual of Life Ins.*, English and German. 3. *Life Agents' Arithmetic* : an easy, clear, and comprehensive solution of the actuarial mysteries of Life Ins., by John Maurice, actuary. 4. *The Life Agents' Canvassing Coupons*, an excellent contrivance. Some of the works in the *Monitor* list are also in Messrs. Goodsell's list [Goodsell's are agents for Layton's, and *vice versa*]. All we have seen of the above works are clear, concise, and practical ; in a word, admirably adapted to their purposes.

AGES AT DEATH.—It is important, especially from a Life Ins. point of view, to know the ages of the people at their death. It is still more important to know their ages in relation to the causes of death. The reports of the Registrar-General furnish us with the most authentic general information which can be obtained. They have the further advantage of distinguishing the sex. An abstract of these Tables will be given under DEATH, CAUSES OF.

AGES IN REGISTERS OF DEATHS.—It was not until 1728 that the ages of persons dying were generally inserted in the parish registers. This improvement was introduced on the suggestion of Smart, the author of the Ins. Tables bearing his name. [PARISH REGISTERS.]

AGES OF INSURED LIFE.—This subject has to be divided under two heads—first, the age at which lives become ins. ; second, the age at which ins. lives die. Mr. Babbage said in his *Comparative View* (1826) that he found the average age at which persons then ins. was 47. Mr. Arthur Morgan said in 1834 : “The lives ins. in the *Equitable* were found to have been admitted generally between the ages of 30 and 50, a very large proportion between 30 and 40, comparatively few under 28-30.” In 1843 he said, “35 is the average period at which people ins. with us.” Dr. Farr said in 1853 (12th Report Reg.-Gen.), “The average age at which ins. is effected is about 35 years.” In the U.S. the average is as nearly as possible the same. It is a healthful sign of the business when young lives ins. in greater numbers than the older ones. Such ins. indicate investment for the benefit of families.

We may offer the following details concerning the ages at which ins. lives die.

In the *Equitable* So. during a period of over 60 years, 1762-1828, out of 21,398 members, of whom, however, 9,324 had discontinued their ins. mostly before they arrived at a very old age, therefore we may say out of 12,074 members, 17 reached 90 and upwards, of whom 4 died at 90, 3 at 91, 2 at 92, and 1 at 94, leaving living 3 at 90, 1 at 91, 2 at 92, and 1 at 93. Thus 10 died at 90 or over, 1 dis. his policy, and 6 were living.

On the occasion of compiling the data for the 17 Offices Experience Table, 1841-3, it was found that out of 62,537 lives ins., but 5 had reached the age of 90 and upwards. These were all “Irish males,” one of whom was living aged 95.

The data for the *New Experience* Table (1869) furnishes the following details. Out of 157,993 persons ins., 95 had reached the age of 90 and upwards ; of these 58 were males and 29 females of the healthy class, and 8 were males and females of diseased classes, sexes not distinguished. Of such total numbers 24 had died at the age of 90, and 5 were living at that age ; 16 had died at 91 and 2 were living at that age ; 13 had died at 92, and 2 were living ; 12 had died at 93, 1 was living, and 1 policy had been dis. at that age ; 8 had died at 94 ; 1 at 96 and 1 policy dis. ; 6 had died at 97, and 1 was living ; 1 died at 98, and 1 at 99.

We may add a few facts about individual offices. The *R. Exchange* in a period of 135 years had no life which survived 96. It had a policy upon which 73 ann. prem. had been paid. The *Lond. Assu.* during the same period had no life that survived 90. The *Equitable* since the date of the preceding obs. has had one life die at 95. The *Rock* had a claim on age 94 ; the *Union* and *Imperial* the same. The *Sun* had a claim at 92 ; the *Atlas* and *Law* life the same. In the case of Annuity and Tontineers greater ages are reached. A female life in the English Tontine of 1693 died at the age of 100, and another was living at that age. In the Perth Tontine one of the nominees died aged 122 ; another aged 107 ; of these statements there is, we believe, abundant proof.

AGES OF PARENTS AS INFLUENCING THE SEX OF CHILDREN.—M. Hofacker first drew attention to this subject in the *Annales d'Hygiène*, 1829, and stated the result of his inquiries to be that when the mother was older than, or of equal age with the father, more girls were born than boys ; but the greater the difference of age on the side of the father, the more the number of male children predominated. Mr. Sadler in his *Law of Pop.*, 1830, pursued the same subject. M. Quetelet has also investigated the question. Mr. Samuel Brown gives in vol. iii. of *Assu. Mag.* a most interesting summary of the result of their several inquiries.

AGIO. *Ital.* Gain or profit.—The term frequently arises in connexion with Marine Ins. and foreign exchanges. Sometimes it is applied to bonuses on Life policies.

AGREED.—This word in a deed or pol. of ins. creates a covenant.

AGREEMENT.—A joining together of two or more minds in anything done or to be done.

Also the effect of a joint-consent of two or more parties to a contract or bargain.—*Law Lex.*

AGREEMENT TO INS.—In the Canadian Courts in 1859 a case arose in which the agent for the *Times* and *Beacon* [English] Co. gave a provisional receipt to the intended insurer, of which the substance was, “the said party to be considered ins. for 21 days from the above date, within which time the determination of the board will be notified. If approved, a pol. will be delivered ; otherwise the amount received will be refunded, less the prem. for the time so ins.” It was held not to be an absolute ins. for 21 days certain, but that the co. might within that period reject the risk, and give notice, after which their liability would cease.”—*Digest of Ins. Decisions*, 1868.

AGRICULTURAL INS.—Agricultural Ins. in England ranks under three heads. 1. Fire, which we shall treat of fully under FARMING STOCK INS. ; 2. CATTLE INS. which we shall speak of under that head ; and 3. HAIL-STORM INS. which we shall also speak of under that title.

In France, in 1857, a scheme was propounded to be called the *General Bank for Agricultural Assu.* It was to be divided into as many branches as there were distinct branches of Ins., viz., against Hail, against Frost, against Floods, against mort. of Animals. Each branch to have separate accounts, and dispose of its own resources. The parent Bank to be empowered by the State. The project was exceedingly well conceived. We can only notice a few of its arguments :

To annul the risks which unceasingly threaten the wealth of nations—to remedy individual injury by collective reparation—to afford by these means an immovable stability to property, and certainty to the proprietors of income—such is the object of assu. ; and assuredly the principle of assu. has never given rise to an undertaking more moral, more useful, or more profitable to both public and private interests. Unfortunately, in its application, assu. has, up to the present time, shared much the same fate as the schemes which have been suggested for the redemption of national encumbrances. Simple in detail, admirable in theory, this economical and financial conception has, in practice, arrived at results comparatively insignificant. . . . The value of the wealth exposed to fire, hail, or to frost, to inundations—and as regards animals, to mort.—is estimated at more than 200,000 millions (francs). Now the total sum assu. does not reach the sum of 40 millions. There remains then uninsured property amounting to more than 160,000 millions.

In restricting ourselves to the subject of Agricultural assu. we find results still more deplorable. The enterprises originated against fire and maritime risks have at least broached the subject which has suggested their operations ; but agricultural assu. presents us only with unfruitful attempts or notorious ill-success. There is no assu. against frost ; there is not any against inundations ; and the Cos. which have undertaken ins. against hail, and the mort. of animals, scarcely cover more than 200,000 millions value.

The scheme was submitted by M. Perron to the Minister of Commerce and Agriculture in France, and by him submitted to the consideration of the Council of State ; but it was rejected by the Council, the Emperor presiding. Some of its features have since become the subject of joint-stock enterprise.

AGRICULTURAL INS. CO.—Another project under this title was reg. in 1859, by Mr. John W. Hutchinson, of Surrey-place, Larkhall-lane. It proposed to carry on Life, Fire, Cattle, and *every other* description of ins. business ! Its aim was greater than its means, and it never matured.

AGRICULTURAL LABOURERS, MORT. OF.—In all nations more or less civilized, the class of men who rank highest in health is that of agricultural labourers. This class is subject to a lower rate of mort., whilst it performs more labour and consumes less of the luxuries of life than any other class. Their superior health is probably due, first, to the higher capacity for labour which they possess and exercise ; second, to their spending the greater part of their days in the open air ; third, to the lowness of their wages, preventing them from injuring their health by the injudicious use of luxuries and stimulants.—*T. R. Edmonds*, 1860. [HEALTH.] [SICKNESS.]

AGRICULTURE AND GENERAL LIFE CO., founded in 1840, with an authorized cap. of £250,000. It appears to have struggled on till 1842, when it collapsed, and has since been written down a swindle.

AGRICULTURIST CATTLE INS. CO., founded in 1845, with an authorized cap. of £500,000, in 25,000 shares of £20 ; subsequently altered into 100,000 shares of £5. The amount of cap. paid up was returned at £76,274. The shares were well subs., and at one time rose to a prem.

The orig. prosp. stated that the Co. was founded for the protection of Farmers and Agriculturists, by ins. against those losses to which they were exposed by disease and accident among their live stock. The first scale of rates was as follows : neat cattle, 2½ p.c. ; young stock (under 2 years), 2 p.c. ; agricultural horses, 2½ p.c. ; carriage horses, 3½ p.c. ; stallions, 5 p.c. The Co. paying three-fourths of the value in case of death. The ins. covered death “by sickness, by the slaughter of the animal in consequence of taint from any contagious or incurable disease, or by accident.”

By 1848, in consequence mainly of a reckless system of management, the Co. had got into some difficulties. Mr. E. Ryley was called in to investigate the affairs. It was found that the sums ins. exceeded £2,000,000 ; and that there were debts actually owing amounting to £75,000. A new board of management was elected, and the rates were increased from 2½ to 3½ p.c. above those orig. charged ; while the allowance in case of loss was reduced from *three-fourths* to *two-thirds* the value of the animal dying.

At this point some of the shareholders wished to retire. This they could not do consistently with the D. of Sett. An arrangement was, however, made in Nov. 1848, under resolutions passed at a special meeting of the shareholders specially convened for the purpose, to the effect that a call of £4 per share should be made, and that those shareholders who wished to retire should pay part only of the call, and that their shares should be forfeited for the non-payment of the rest. Under this arrangement—since known as the “Chippenham Compromise”—many of the shareholders did retire. The legality of this proceeding has since been impeached, but is upheld.

The Co. had extended its operations to the Ins. of Lives; but at this juncture its Life policies (very few indeed) were trans. to the *Norwich Union L.*

The Co. numbered amongst its patrons some of the leading nobility of the three kingdoms. Its income increased, and reached £30,000 p.a.; but yet it did not gain a sound position. It absorbed the businesses of various local Cattle Ins. Asso. In 1851 it took over the bus. and connexions of the *Essex Mut. Cattle*, then recently formed; and in the same year another asso. in Lancashire. At a gen. meeting held in Dec. of that year, the directors were authorized to issue 25,000 of the unappropriated shares as “preference shares,” carrying int. at 5 p.c., payable half-yearly. It was said at that date that the Co. had paid £300,000 in losses on its bus. The Co. at this date resumed the bus. of Life Ins., issuing a special prosp., and keeping the affairs apparently distinct. This we give an account of under AGRICULTURIST LIFE. In 1857 the Co. paid a div. of 6 p.c.

By 1861 the Co. found itself unable to pay its debts, and it passed into liq. Mr. L. H. Evans was appointed official manager. His path was beset with difficulties from the commencement. The immediate assets were not sufficient to pay rent and salaries; and the shareholders, with many of whom arrangements had been made for their retirement, subsequent to the arrangement of 1848, refused to acknowledge any liability or pay any debt of the Co. Litigation was therefore inevitable. The first proceedings in the way of litigation brought about an arrangement with the majority of the shareholders.

There were found to be about 1500 creditors, most of them under policies. The conditions of the policies limited their holders to claim upon the funds of the Co. only, and so estab. a species of limited liability. As to bonds upon which money had been raised, and simple contract debts, there was no such limitation; therefore, the latter are to be paid in full, while the policy-holders will only receive a dividend.

On the 11th March, 1863, a call of £20 was made by the official manager—that was the whole amount of the original shares—against which was to be credited all sums previously paid thereon. It was from the proceeds of this call that the policy-holders were alone to look for payment. They have been paid 6s. in the £, and may yet receive another small div. On the 21st Dec. 1866, a further call of £20 per share was made.

Against some of the shareholders who made arrangements of compromise, subsequent to the Chippenham arrangement, proceedings were taken. These have resulted in three appeals, two by shareholders, one by the official manager. By 1868 these were so far decided that the further contributions required from the shareholders could be approximated. The result was a call of £250 per share on the £20 shares, and of £62 10s. on the £5 shares.

In the course of the litigation it has been held—1. That having regard to the publicity and *bona fides* of the Chippenham arrangement (Nov. 1848), and to the time which had since elapsed, the validity of the retirement of those shareholders who withdrew in pursuance of that arrangement could not be disputed, and that those persons were not liable to be settled on the list of contributories. 2. That those persons who retired afterwards by arrangement with the directors, but without the knowledge of the other shareholders, were to be treated as shareholders still, and were to be placed on the list, although in some cases 12 years had elapsed since their retirement; and this view has been supported on appeal.

There is still some litigation going on, by way of appeal to the House of Lords, and there is one case pending in France, and one in the Australian courts; but practically the affairs are at a close; nor do we think any unnecessary time has been occupied in closing such a complicated business. It may be said that every legal question which can be raised in the winding-up of a Co. has been raised here. Hence it must always be regarded as a “leading case.”

In 1871 another call was made as follows: £280 p. share on the £20 shares, and £70 on the £5 shares. In August of this year it was announced that the bal. of debt and int. due to creditors “other than policy-holders,” must be forthwith paid; and then all that will remain to be done will be to adjust the rights of the contributories amongst themselves.

AGRICULTURIST LIFE INS. CO.—A Co. under this title was advertised in 1847 as being worked in connexion with the *Agriculturist Cattle*; but it appears only to have been a branch of the last-named Co. The prosp. said:

The Directors, at the repeated solicitations of the agents, inspectors, shareholders, and a large body of the ins. in this Co., have been induced to add ins. on human lives and the other departments of a life office to their ordinary bus. . . . The assu. of human life not having yet been very extensively adopted in the agricultural districts, a wide field remains comparatively untrodden for the operations of this Co. To the relative positions of landowner, the farmer, and the numerous class engaged in the

cultivation of the soil, therefore, has the attention of the Directors been especially directed in the arrangement of their plans; and the rates will be found proportionably moderate.

The rates of prem. were not lower than those of other offices using the Carlisle Table. It had this special feature: "Farmers or agriculturists going out to settle in the Australian colonies, the U.S., British North America, or Canada, may be ins. at the common rate of prem." And also this very good regulation, "Proof of the date of birth will be required from a proposer, and will be admitted on the policy." Mr. Wm. Fenton was the manager. The Co. purported to have an Education Fund and Widows' Fund, each to be formed out of profits which were never realized.

AGROUND.—Aground is the situation of a ship whose bottom or any part of it rests upon the ground, so as to render her immovable till a greater quantity of water floats her up, or till she is drawn out into the stream by the application of mechanical powers.—*Falconer's Mar. Dict.*

AGUE (class ZYMOTIC, order *Miasmatic*).—The deaths from this cause in England present some fluctuations, and appear to be on the decrease. In ten consecutive years they have been as follows: 1858, 207; 1859, 233; 1860, 203; 1861, 149; 1862, 150; 1863, 141; 1864, 112; 1865, 117; 1866, 135; 1867, 121; thus presenting a variation of from 11 per million of the population living in 1858, down to 5 in 1864, and 6 for each of the three years following. Over a period of fifteen years ending 1864, the deaths have been 8 per million. With the more extended drainage of the soil, and improved sanitary regulations, this disease should continue to decrease.

The deaths in 1867 were: males 64, females 57; and they were spread pretty evenly over the different periods of life; the heaviest mortality with males being between 45 and 55.

AID LIFE ASSURANCE ASSO. LIM., founded in 1870, with an authorized capital of £25,000, in shares of £5. The two principal movers in founding the office appear to have been Mr. G. S. Horsnail, who is appointed Manager, Actuary, and Sec., and Mr. W. Beck, who is appointed Solicitor. These appointments are made under the articles, and the parties cannot be removed, except for dishonesty or negligence, and then only after the same shall have been proved to the satisfaction (?) of two successive general meetings.

AIKIN, DR.—He kept a register of the mortality of Warrington, Lancashire, for seven years, between 1773 and 1781, from which Dr. Price deduced the *Warrington Table of Mortality*.

AIR, ATMOSPHERIC.—The influence of pure air in the preservation of human health has long been known; while the converse, that impure and unwholesome air produces disease and pestilence, has also long been understood, from the obvious results rather than from any scientific explanation of the why and the wherefore. Science is now beginning to perform its proper functions in the matter. We cannot enter upon details, nor can we pass the subject without some notice.

Pure air in its composition consists of about 77 parts of nitrogen, 21 of oxygen, and 2 of other matters, such as carbonic acid, watery vapour, a trace of ammonia, etc. More recent investigation has led to the discovery of two states of the oxygen of the air—*ozone* and *antozone*.

Dr. Prout, in a *Bridgewater Treatise*, was one of the first who had suggested the possibility of the occasional existence of extremely minute portions of deleterious matters in the air during the prevalence of epidemic disorders; and in reference to this subject, a remarkable observation occurred during the prevalence of the cholera. For more than six weeks previous to the appearance of the cholera in Lond., he had been almost every day engaged in accurately determining the weight of a given quantity of air under precisely the same circumstances of temperature and pressure. On Feb. 9th, 1832, the specific gravity of the air suddenly rose above the usual standard, and it continued so for 6 weeks. On the same day the wind, which had been west, veered round to the east, and the first cases of epidemic cholera made their appearance. Professor Tyndal and others have since followed up this line of experiment with wonderful success.

Dr. Smith and Mr. Dancer have recently examined the air of Manchester by the aid of the microscope, and have found it to be full of spores and other organic germs, the presence of which in probably all air leads, no doubt, to the phenomena imputed to spontaneous generation, and is probably the cause of the epidemic character of many diseases. The air was first washed by shaking it in a bottle with distilled water, and in a drop of the water it was reckoned that there were about 250,000 spores, and these only require to be lodged in suitable situations to spring into activity. In the quantity of air respired by a man in ten hours it was reckoned that there would be about 37½ millions of these spores or organic germs.

The average rate at which the wind (air in motion) travels in England is 4½ (4·125) miles per hour. The highest pace recorded was in 1850, when it was more than 4½ miles per hour (4·530); the lowest was in 1853, being 3½ (3·548) per hour. In 1856 it was 4·244, nearly 4½ miles per hour. 1850 and 1856 were each healthy years; 1853 unhealthy. Here is scope for further investigation.

The reports of the Reg.-Gen very frequently draw attention to the importance of these inquiries. [ATMOSPHERE.] [CLIMATE.]

AIR SHAFT.—A passage through a building for the admission of air. This is an important

feature in a Fire Ins. risk, as such a shaft creates a draft and acts as a conductor of the flames.—*Ins. Agent.*

AKEN, M. VON.—In 1792 he made various public experiments for extinguishing fires by chemical preparations, and accomplished some very wonderful results. [FIRE ANNIHILATORS.]

ALABAMA, INS. LAWS OF.—By a law of 24th Feb., 1860, Ins. Corp. of other States and foreign countries might estab. agencies in this State, but all such Cos. must have at least 100,000 dols. actual cap.

By authority of revised code of 1867, married women may insure lives of their husbands. Amount payable to wife, free from claims of husband's creditors. If wife dead, then to children.

By general ins. law 31 Dec., 1868, all Cos. doing bus. in this State must deposit 10,000 dols. in bonds of Comptroller of the State. Ann. statements to be made in July. State Cos. to pay 1 p.c., and those from other states and foreign countries 2 p.c. on all prems. received ann. for public school purposes. Laws of 1860 and 1867 embodied. No distinction as to class of bus., whether Fire, Life, Marine, etc. General provisions relating to Corp. revised code 1867.

ALARM.—The earliest intimation of a fire is sometimes called an "Alarm." Technically it is a FIRE CALL, which see.

ALARM BELL.—In many country districts there exists an alarm bell, which is only rung on the occasion of a fire in the parish or neighbourhood. These bells are frequently on the manor house. The custom is a good one.

ALAUZET, ISIDORE, pub. in Paris in 1844 (2 vols.), *Traité Général des assurances, assurances maritimes, terrestres, mutuelles, et sur la vie.* This production bears marks of profound consideration of the subject, of familiarity with the great authors of the law, and is full of a very bold and at the same time very sagacious criticism. The work is written in the spirit of careful investigation and sound reflection, and will be of both interest and profit to any one, however conversant with the subject.

ALBERT AVERAGE ASSO. for British, Foreign, and Colonial built Ships, founded in Lond. in 1866, on the principle of mutual contribution, and passed into liq. in 1870. Mr. Thomas Kennedy is the Liquidator.

ALBERT INS. Co. (for Fire and Marine Ins.), founded in 1864, with an authorized cap. of £1,000,000, first issue £500,000.

The Co. was promoted by Mr. George Kirby, the then Man. Director of the *Albert Life*; and about half the board of this Co. was composed of the Directors of that Co.

In its first year it took over the bus. of the *Oriental and General Marine*, and of the *Alexandra Fire*. It founded fire branches in Manchester, Leeds, Bristol, Dublin, India, Japan, etc., etc.; and also entered upon Marine bus. very freely. Its prem. income for the first year was said to be about £161,000. After this the public were prepared to see some change; and in 1866 the bus. was trans. to and united with that of the *Western Fire*. Mr. Morell Theobald was the Manager of the Fire Department.

ALBERT LIFE ASSU. Co. founded in 1838, under the title of the *Freemasons and General Life Assu. Loan, Ann. and Rev. Int. Co.*, with an authorized cap. of £500,000, in 25,000 shares of £20, of which £3 per share became paid up. In Dec. 1849 the name was changed to the *Albert Life Assu. Co.*

Upon the formation of the Co. it was stipulated by the deed that the shareholders should receive 5 p.c. int., and that the whole of the profits upon the pol. not entitled to a share of the profits should be divided amongst the shareholders, and the profits upon the pol. issued on the parti. scale should be apportioned between the holders of such pol. But it was found impracticable to continue this principle of division after the amalg. of other Cos., and from the 1st January, 1862, the profit was divided in fixed proportions, namely, 80 p.c. to the policy-holders, and 20 p.c. to the shareholders.

The Deed of Set. was most ably drawn, and was especially guarded and strong in limiting the liability of the shareholders to the amount of cap. actually subs. The advantages of which precautions have appeared in a very marked degree in the later hist. of the Co.

The Co. appears to have transacted a very steady bus. during the first ten years of its existence. In 1849 it took over the bus. of the *Preceptors and General Life*, a very small affair estab. in the preceding year. In 1856 it took over the *Beacon Life*, which had been founded three years previously. In 1867 it took over (1) *National Guardian Life*, founded 1851 (which had in 1855 taken over *Official and General*); (2) *London and County Life*, founded 1851 (which had in 1854 taken over the *Oak Mut.*); (3) *Times Life* and *Guar.* (which had in 1850 taken over the bus. of *Independent*). It may be said that it was in this year (1857) the Co. entered upon that wild career of amalg. which ultimately destroyed it. In 1858 it took over the bus. of the *Bank of Lond. and National Provincial*, founded 1851 (which had in 1856 taken over the *Falcon* and the *Durham and Northumberland*; in 1857 the *Anchor*; and in 1858 the *Merchants' and Tradesmen's*). In 1860 it took over the *Medical, Invalid, and General*, founded 1841 (which had in 1853 taken over the *New Oriental*, of Calcutta, and also the *Agra*). In 1861 it took over the *Family Endowment*, founded 1835 (which had in 1857 absorbed the *Empire*, No. 2). In 1862 it

took over the *Kent Mut.*, founded 1851 (which had in 1857 absorbed the *English Provident*). In 1862 it took over (1) the *Western Life*, founded 1842 (which had absorbed (1) *Manchester and Lond.* (2) *Metropolitan Counties*, which had previously (1861) absorbed the *St. George*, which last had absorbed in 1859 the *London and Continental*) ; (2) The *Indian Laudable*.

Thus by the end of 1865 we find a total of no less than 26 absorbed offices—making with its own bus. 27 offices rolled into one—or rather seeming to be so. In the course of these arrangements the Co. itself several times assumed a change of name, as in 1857, *Albert and Times*; in 1860, *Albert and Medical*; in 1861, *Albert, Medical, and Family Endowment*. None of these changes were legally authorized, and in 1863 the Co. resumed its title of the *Albert Life Assu. Co.*, and continued it to the end.

The share cap. of the Co. was not much affected by these amalg., except that it became all placed; and while £3 p.s. was the sum nominally called, upon some of the shares issued in connexion with those arrangements a much larger sum was credited as paid.

On the occasion of the taking over the bus. of the *Medical Invalid*, in 1860, which Co. had a large connexion in India, the *Albert* commenced very active operations there, under the direction of Mr. W. F. Fergusson, who had been the manager of the *New Oriental*, and Mr. P. M. Tate, who had been the Indian manager of the *Medical*. In 1861 the Indian bus. of the *Family Endowment* was added; and in 1865, the bus. of the *Indian Laudable*. Hence the Co. had obtained such a position as no British Co. ever had, or prob. ever will obtain there. The profits of that branch were estimated at from £20,000 to £30,000 p.a. The head office was in Calcutta, and there were branches in Bombay and Madras. There were also agencies in China, and in many parts of the East.

The income after these various amalg. reached something like £330,000 p.a.; but still there was an uneasiness and distrust regarding the position of the Co., well-informed ins. men discovered lurking amidst these large figures elements of danger. The public also began to suspect danger. The sum paid for "surrender of policies," which in 1866 was £10,631 (about the same as it had been in the two preceding years), in 1867 rose to £17,453 5s. 2d.; and in 1868 reached £19,296 3s. 1d. In 1869 the Directors left off paying surrender values. It was feared the end was at hand. On the 13th August (a day or two after closing the Courts for the long vacation), an application was made to the vacation judge in Chancery to appoint provisional liquidators. Thus the Co. stopped with liabilities estimated at nearly £4,000,000; and an estimated deficiency of *one million!*

Mr. Geo. Goldsmith Kirby, the founder and manager of the Co., died in April, 1868; his son succeeded him. It is probable that had the father survived, the fate of the office might have been modified. He knew and understood all the ramifications of the Co. The son was strange to the bus. and its complications; but all who know him know that he did his best to avert, and has since done his best to mitigate, the severity of the calamity. As there has been some misapprehension as to the senior Mr. Kirby's financial relations with the Co., we furnish the following details from official sources:—

Mr. Kirby was the original projector of the Co., and the terms of his engagement, as stated in the Deed of Settlement, were—that he should be appointed for life managing director; that he should receive the annual sum of £400, and also 5 p.c. upon all prems. received; that he should be permitted to occupy as a private residence, and also as offices for his private bus., rent free, the premises in Waterloo-place not required by the Co.; that he should be allowed to carry on his professional bus. on his own account, and have the conduct of the legal bus. of the Co., for which he was to be allowed the usual professional charges. When the amalg. with the *Medical Invalid and General Office* was effected in 1860, it was arranged that Mr. Kirby should take one-half p.c. only upon its prems., and allow a yearly reduction from his total commissions of £500.

From the 1st January, 1864, to 31st December, 1867, Mr. Kirby's account had been credited with one moiety of the 5 p.c. commission, of which £6188 11s. 3d. remained unpaid, and he was entitled to the other moiety amounting to about £18,000. On the 4th December, 1867, the following arrangement was made—viz., that in lieu of the above £18,000, Mr. Kirby should accept £15,000, payable by six half-yearly payments, with 5 p.c. interest, the first instalment to be paid on the 1st January, 1868, and that subsequently to the 31st December, 1867, Mr. Kirby was not to be entitled in any one year to more than £3100 in respect of commission. In default of payment of any of the above instalments and interest for 30 days after due date, Mr. Kirby's original rights to revive, and the agreement was not to prejudice his right to the balance of the moiety which he had not received. On account of the £15,000 and interest, two instalments, of together £5312 10s., have been paid, the latter in July, 1868, since which nothing has been paid. On Mr. Kirby's death the commission arrangement terminated.

Immediately on the collapse of the Co., a very searching investigation was made into its affairs. We can only briefly notice the main results elicited. On a valuation of assets and liabilities, as from 31st Dec., 1854, a bal. of £53,314 remained in favour of the Co. Another valuation to 31st Dec., 1858, showed a profit realized of £27,808. Another valuation to 31st Dec., 1861, showed a profit of £33,650. An investigation at the end of 1866 showed a loss of £281,702. That was a net prem. valuation; the others had been on the gross prems. The loss was attributed to the amalg., and the following detailed account has since been made up, one or two of the smaller offices being omitted:

NAME OF COMPANY.	DATE.	Cost.		
		£	s.	d.
The Beacon Life Assu. Co.	Sept. 1856	2,239	13	8
The National Guardian Assu. So.	Feb. 1857	16,315	19	11
The London and County Assu. Co.	Feb. 1857	201	7	0
The Times Life and Guarantee Assu. Co.	March, 1857	21,250	14	11
The Bank of Lond. and National Provincial Assu. Asso.	Sept. 1858	91,641	18	4
The Medical Invalid and General Life Assu. Co.	Sept. 1860	77,735	14	8
The Family Endowment Life Assu. and Ann. So. ...	March, 1861	22,650	0	0
The Kent Mut. Assu. So. (Registered)	July, 1862	15,528	13	6
The Western Life Assu. Co.	June, 1865	25,616	1	8
The Indian Laudable Assu. So.	July, 1865	972	0	0
Total.....		£274,152	3	8

This exclusive of any loss upon the assets handed over by those offices.

The highest point of prem. income was in 1866—£331,714 from prems., int. added making £344,117. The claims and annuities paid in that year were £331,833; the expenses of management, £60,789; dividends and bonus, £13,625, total £406,248. In 1867 the prem. income was £317,033, total income £329,506; claims and annuities, £278,339; expenses, £73,777, dividends, £9,041, total £361,159. In 1868 income from prems. £308,318, total income £320,661; claims and annuities, £281,687, expenses £53,194; dividends, £9,039; sundries, £1125; total outgo, £345,046. It is probable that 1869 would have produced still more unsatisfactory results. The directors, most of whom were honourable men, grew alarmed at the prospect, and hence the stoppage of the Co., after an investigation of its affairs by Mr. Jellicoe and Mr. A. H. Bailey.

The annuity contracts in force involved a yearly charge of £18,500. Happily the Co. had for some years almost ceased to grant annuities. The debts to outside creditors amounted to about £20,000. The paid-up cap. of the Co. was £178,011, the uncalled cap. £331,089.

The stoppage of the Co. was very soon followed by consequences of a serious character. Annuity holders and claimants under pols. issued by the Cos. which had amalg. with the *Albert*, now that Co. had stopped, went back upon the orig. offices. Thus, in the course of a few months the following asso. were also ordered to be wound up:—*Medical Invalid, Family Endowment, Bank of Lond., Western*. (The *Kent Mut.* was ordered to be wound up, but the order has been set aside). All these asso., however, held Guarantees of Indemnity from the *Albert*, and would fall back thereon. This would be ruin to the shareholders one and all, in the event of their liability proving unlimited. Then, again, criminal proceedings, and suits in equity against the directors personally, were threatened and commenced. A lifetime of litigation appeared in prospect, when the Reconstruction Committee came upon the scene; and if that body has failed in its orig. aims, it still well deserves the thanks of the entire body of *Albert* share and policy-holders. [ALBERT RECONSTRUCTION SCHEME.]

ALBERT (LIFE ASSU. CO.) ARBITRATION.—The efforts of the Committee in support of the *Albert* reconstruction scheme eventuated in the passing of an Act of Parl., 34 Vict., c. xxxi, "An Act to effect a settlement of the affairs of the *Albert* Life Assu. Co. by arbitration, and for other purposes." The Act received the Royal Assent 25th May, 1871. Lord Cairns was appointed arbitrator, with full powers—powers more ample than were probably ever before vested in one man—and no appeal. On the 26th May the Arbitrator commenced his sittings. He intimated very clearly that he intended to regard the rights of all parties; but he did not intend to have any unnecessary delay. He has acted up to that determination. He has heard all the causes that were set down for hearing in any of the Courts of Chancery or elsewhere in this country; and has delivered judgment upon the same. He has also determined the following most important points:

1. That the liability of the *Albert* shareholders is not unlimited, either upon its ins. contracts or in respect of the indemnities given to the amalg. cos.

2. That where policy-holders have accepted the liability of the *Albert* in lieu of any of the orig. cos., that is to say, where they have not made a formal protest against the transfer, they have surrendered their rights under their orig. contracts, and can now claim upon the *Albert* only. [NOVATION.] As to *annuitants* the case is different. They can only have surrendered their rights under their contract with the original Co. by some specific act of consent of equal force with the original contract, as in Dale's case.

3. That annuitants and policy-holders, in order to prove upon the *Albert*, must have their claims estimated according to a settled principle of actuarial valuation (as on the date of the winding-up order), as directed by the 158th sec. of Cos. Act of 1862, and the 25th Rule of Court made thereon. This principle of valuation he has directed shall be as follows: Annuity holders on 4 p.c. Gov. Annu. Tables; Life and Endow. pol. on a pure prem. valuation 4 p.c. (Old) *Experience* Table; quite independently of questions of health or over-age. Nor is there to be any difference in favour of parti. as against non-parti. pol.

4. That having regard to the rights of all parties (and some inherent difficulties), he could not sanction a scheme of reconstruction.

5. That the various amalg. were *intra vires* the powers of the Directors (who are not personally responsible beyond their capital in the undertaking), and must be upheld.

These are the leading features of his ruling. They are based on substantial justice, although of necessity they inflict some hardship upon individuals. By his Lordship's prompt action and enlightened judgment thousands of families will be saved from ruin, and an amount of litigation avoided which would have lasted a generation. All this at about one-tenth of the cost which must have been incurred in fighting out the questions involved by the ordinary and inefficient channels of the Court of Chancery. The arbitration is still proceeding.

ALBERT (LIFE ASSU. CO.) LIQUIDATION.—The order for the appointment of Provisional liquidators was made on 13th August, 1869. Mr. S. L. Price and Mr. Arthur R. Kirby were appointed. On the 17th September, 1869, the Co. was ordered to be wound up by the Court. Mr. John Young and Mr. S. L. Price were appointed liquidators. The winding up was removed from the control of the Court of Chancery by the *Albert Life Assu. Co.'s Act, 1871*. Lord Cairns was by that act appointed arbitrator with full powers. He has retained Messrs. Young and Price in their positions. They act under his directions entirely. Messrs. Lewis, Munns, and Co., are solicitors to the liquidators. The whole of the uncalled cap. of the *Albert Co.* has been called up. The costs of the winding-up will fall upon the shareholders, beyond the subs. cap., as in the *Professional* case. Mr. F. S. Reilly is acting in the capacity of assessor to Lord Cairns in the arbitration.

ALBERT RECONSTRUCTION LIFE ASSU. ASSO. LIM., founded in 1870, with an authorized cap. of £250,000, in shares of £10. The objects of the Co. as registered were: To carry on the bus. of a Life Ins. and Rev. Int. Co., etc., in Gt. Brit., India and elsewhere, and to assist in the liq. of the affairs of the *Albert Life Co.* It has not progressed, for reasons which will be stated in the next art.

ALBERT RECONSTRUCTION SCHEME.—When the legal and other complications of which we have spoken [*ALBERT LIFE ASSU. CO.*] became apparent, a number of influential gentlemen, many of whom were connected with Indian interests, came forward and propounded a scheme of reconstruction, on such a basis as, under the circumstances, seemed to them alone possible. A fund was to be raised to make up in part the acknowledged deficiency in the assets. This deficiency was stated to be £560,000; it being reduced to this lesser amount in the belief that a considerable portion of the commissions formerly allowed on the collection of prems. would be saved in working the reconstructed scheme. Adding various charges of liq., and otherwise, the entire deficiency would reach £640,000. Against this there was to be set-off value of some of the *Albert* assets, reducing the deficiency to a net sum of £444,000. It was proposed to make up this sum as follows: The uncalled cap. of the *Albert*, nominally £321,989, was estimated to produce £150,000. This the solvent shareholders of that Co. agreed to supplement with £34,000. The bal. of £260,000 still required was to be contributed voluntarily by the shareholders of the amalg. cos. in the place of £547,167, which they might collectively be called upon to pay in the event of the winding-up of those several asso. proceeding. The mut. offices were not included as contributors.

As this calculation was computed with a very slender margin for contingencies, it was proposed to form a guarantee fund of £300,000—or rather its equivalent, which would be obtained by the annuitants and parti. pol.-holders agreeing to an abatement of 10 p.c. from their claims, and the non-parti. pol. of 12½ p.c.; this regulation not to apply to any pol. of less than 6 years' standing. The above abatement to be represented by a certificate payable thereafter as the funds might admit.

In view of any new bus., it was proposed to provide a new cap. of £250,000, by means of the *ALBERT RECONSTRUCTION LIFE ASSU. CO.*, this to be kept distinct from the administration of the affairs of the old Co., which, however, the new Co. was to undertake.

This scheme, with various modifications from time to time introduced, received the sanction of several meetings of share and policy-holders, directed to be held for the purpose of considering it. But as it did not (and we may add *could not*) embody any scheme of surrender values for such policy-holders as desired to surrender their policies, it met with some opposition, especially from an influential body of German policy-holders.

V.C. James allowed *Albert* policy-holders to pay their prems. to a special fund in view of this scheme being carried through. About £40,000 was so paid.

When the scheme came up for final hearing before V.C. James he did not sanction it, but recommended an application to Parl. A Bill was accordingly introduced early in the Session of 1871; and after a strong fight in committee, and some amendments, was passed. It opened up a new phase, details of which we have given under *ALBERT ASSU. CO. ARBITRATION*. The Arbitrator finally rejected reconstruction as impossible; but the thanks of the policy-holders are due especially to Dr. Farr, Mr. Arthur R. Kirby, and Mr. D. Forrest, for their well-intentioned labours.

ALBION FIRE AND LIFE INS. CO. (No. 1), founded in Lond. in 1805, under a Deed of Asso. or Partnership, with a cap. of £1,000,000, in 2,000 shares of £500, upon which £50 was paid up. The liability of the individual partners was limited in very strict terms to the amount they respectively held in the capital stock of the Co.

The business of the Co. extended to the ins. of all descriptions of property against Fire, not only in the U.K., but in foreign countries. Also to Life Ins., Survivorships and Annuities.

The orig. prosp. contained this announcement :

It is one of the advantages of the Co. to the public, that it holds out no profession of sharing profits with those it insures. Persons insured are not liable to *calls*, to make good the losses of others ; a responsibility from which they could not be free, if their insurances were accompanied with any prospect of benefit to arise from profits, whatever guarantee might be offered. Persons insured on the plan of receiving returns have been actually subjected to the effects of this dangerous contingency.

The following were distinctive features of the Office : Claims were payable *one month* after proof. No notice of assignment of life policy was required until claims thereunder arose. Policies were granted on the lives of persons about to proceed on long voyages, or intending to reside in foreign countries beyond the prescribed limits, "at prems. proportionate to the nature of the risk." A "large commission" was allowed to solicitors, brokers, and others, "who effect Life Ins."

In 1806 this Co. petitioned Parl. against granting a Charter to the *Globe* Ins. Co., then in course of formation, and prayed to be heard by counsel, etc., against that undertaking.

The Co. appears to have entered upon Fire Ins. with more zeal than discretion. It collected duty during the first quarter to the extent of £3,568 4s. 7d., then regarded as a very considerable amount for a young Co. It relinquished the Fire bus. in 1827 or 1828.

In 1807 it obtained a Special Act of Parl. 47 Geo. III. c. xxxi., an Act to enable the *Albion* F. and L. Ins. Co. to sue in the name of the sec. and inrol annuities. This Act recites :

Whereas several persons have formed themselves into a so. or partnership under the name, etc., and have subs. or raised considerable sums in order to effect ins. against Fire and on Lives, and to grant and purchase annuities : and whereas the public hath been greatly benefited by the formation of the so. or partnership with a competent capital to carry on the same ; and a considerable revenue is derived to His Majesty therefrom. And whereas difficulties have arisen, and may from time to time arise, as well in recovering debts which may grow due to the said so. or partnership called, etc., as in prosecuting persons who may steal or embezzle the property of, or who may commit or be guilty of any other offence against, or with intent to injure or defraud the said so. or partnership, as by law all the several subs. or proprietors to and in such so. or partnership must in such cases sue and prosecute by their several and distinct names and descriptions, etc.

Then it recites the Annuity Inrolment Act, and finally gives power to sue or prosecute in name of sec. and to inrol annuities under act.

In the same year another Act was obtained, 47 Geo. III. (Ses. 2), c. lxxxvi., to explain and amend the Act just recited ; and in 1809 another special Act was obtained, 49 Geo. III. c. cxxv., to explain the two preceding Acts more particularly with respect to the inrolment of annuities. Each of these Acts was careful to explain that it did not mean in any manner to incorp. the Co.

The Co. at a very early date estab. an agency in New York, and transacted bus. in various parts of the U.S. In 1854, when the Ins. Law of N.Y. required all Foreign Cos. to make a deposit of 100,000 dols., this Co. complied with such law, and made its deposit.

In 1851 it was under the consideration of the directors whether the Co. should not be made mut. ; but it was determined under the advice of Mr. C. Jellicoe not to take that step then.

In 1857 it was announced that the bus. of the *Albion* was trans. to the *Eagle* on terms of special advantage to the former. The trans. took place as from 30th June that year. The shareholders of the *Albion* received a cash payment of £207 14s. 7d. per share in respect of each £50 paid. The policy-holders were to share in the bonuses of the *Eagle*. The reason assigned for the trans. was that the bus. of the *Albion* on the other side of the Atlantic was disproportionate to the bus. here ; and this would be remedied by trans. to a large English Co. The officers of the *Albion* were properly provided for and in truth every one seemed benefited by the arrangement.

ALBION LIFE ASSU. SO.—This asso. was founded in 1864, with an authoriz. of £50,000, in 5,000 shares of £10. This was intended to constitute a guarantee with a view to Mut. Ins. There is power to pay off the fund so raised ; in the meantime it carries int. at 6 p.c. The objects of the asso. are very ample, viz. :

The granting assu. on a single life, or joint lives, and on survivorships, or for limited term, or contingently determinable, and either with or without parti. in the profits of the co. ; the purchase and sale of annuities for lives and limited terms, immediate and deferred ann., and ann. to children or strangers, payable from the death of a parent or other person ; the granting of endowments for widows or for children, born or to be born, or for strangers, and at all ages, and all other periodical provisions or payments, immediate, deferred, reversionary, or contingent on human life, or for terms certain ; and advance of moneys on personal securities or contracts, whether secured by assu. effected with the co. or not, and on such terms as the directors shall think fit ; and all other bus. whatsoever usually effected by cos. or sos. of the like nature, etc.

The liability of the shareholders is unlimited. Three-fourths of profits to policy-holders. First division 1868. Mr. George Thomson to be first permanent managing director. Mr. Thomas Knox Holmes, the well-known parl. agent, was one of the subs. to the memorandum, and also one of the first directors. The remuneration of directors to be fixed by meeting. All policy-holders are to become (if required) members of co. The scheme of the asso. is carefully prepared. Policies are granted on half-credit plan, for first 5 years. Whole-world pol. are granted.

ALBION MARINE INS. CO. LIM., founded in Liverpool in 1863, with an authorized cap. of £1,000,000, in 50,000 shares of £20 each. On the 27th Nov. 1866, a meeting of the shareholders was held to discuss the position of affairs. The statement of accounts submitted showed that the paid-up cap. of £100,000 was nearly all lost; £30,000 had been lost by the cyclone at Calcutta alone. It was thought that by winding up at once about £10,000 would be obtained to pay the outstanding claims. It was therefore resolved to wind up voluntarily.

ALBION MARINE MORTGAGE AND INS. CO.—A project under this title was set on foot in London in 1862, but we believe it then resulted in nothing practical.

ALCHEMISTS.—The chief aim of the Alchemists was the transmutation of the inferior metals into gold. From this sprang the search so long continued, and still pursued, for the *Elixir vita*, or *Water of Life*, under which heads we shall speak further upon the subject.

ALCOHOLISM.—Under this title the Reg.-Gen. deals with two important causes of death, viz., *Delirium Tremens* and *Intemperance*. The deaths from these combined causes are very numerous. Gastritis might well be included also under this head. [DELIRIUM TREMENS.] [GASTRITIS.] [INTEMPERANCE.]

ALDHAM AND UNITED PARISHES INS. SO.—This is really only a Friendly So., founded at Aldham, in the county of Essex, in the early part of the present century.

ALDRICH, STEPHEN S., was Sec. of *English and Irish Church Ins. Asso.* from its commencement down to 1854.

ALEA.—The chance of gain or loss in a contract.

ALEATORY CONTRACT, an agreement of which the effects with respect both to the advantages and losses, whether to all parties, or to some of them, depend on an uncertain event.

ALEWYN, FRID., pub. at Amsterdam, in 1824, *De jure rerum naufragarum*, or the Law of Wreck.

ALEXANDER, L. C., LL.D., Sec. in Lond. of *Norwich Provident*, since 1870. Dr. Alexander has rendered good service to the cause of industrial ins., the first by urging, and ultimately (1870) prevailing upon the Gov. to reduce the stamps on life policies for £10 and under, from 3d. to 1d.; next, in securing the transmission of pol. of ins. by book post. Such practical services are too frequently altogether overlooked and forgotten.

ALEXANDRA MARINE FIRE AND GUAR. INS. CO., founded with an authorized cap. of £1,000,000, in 1863, the year in which the charming Princess of that name was first welcomed by the English people. The Co. was regis. by Mr. James A. Foot, a director. It appears to have commenced Fire bus. only, and in the following year it was trans. to the *Albert Fire and Marine*.

ALEXANDRA MUTUAL LIFE AND ANNUITY CO., founded in 1868, on the principle of the liability of shareholders being limited by guarantee. As this is, we believe, the only L. Ins. asso. so constituted, we propose to point out in what respect it differs from ordinary Lim. Liability Cos. It is in this, that the sum each member is to contribute to the assets of the Co. in the event of winding-up must be defined in the Memorandum of Asso. at the time of registering it. [LIMITED BY GUARANTEE.] In this Co. the limiting clause is as follows:

IV. Every member of the Co. undertakes to contribute to the assets of the Co. in the event of the same being wound-up during the time that he is a member, or within one year afterwards, for payment of the debts and liabilities of the Co. contracted before the time at which he ceases to be a member, and the costs, charges, and expenses of winding-up the same, and for the adjustment of the rights of the contributories amongst themselves, such amount as may be required, not exceeding £5.

Then the articles tell us who are members:

Sec. 5. The Co. for the purpose of registration is declared to consist of 500 members. 6. The hereinafter-mentioned may, whenever the bus. of the Co requires it, register an increase of members. 7. An assurer shall be deemed a member who assures for £100 and upwards.

The members are entitled to attend general meetings and vote; if ins. for £100, 1 vote, if £500, 2 votes, and 1 add. vote for each £500 ins. (Sec. 32.) The articles contain the following "Ratification" clause:

III. All persons who are or may become members in this Co. shall be deemed and taken to have ratified and confirmed as have been or shall be previously done by the Board of Directors or members in the Co. in regard to the promotion, formation, objects and bus. of the Co., and the funds or property thereof, or in any way relating thereto as are not contrary to the provisions of "The Cos. Act, 1862," under which the Co. is registered.

A guarantee fund was to be raised by the issuing of debenture bonds of £5 and upwards, carrying 6 p.c. int. repayable in 15 years by ann. drawings after the first 5 years or sooner, at the option of directors, and upon terms of advantage to holders.

Mr. A. W. Ray was the founder of the Co. and is its Managing Director. There was no promotion money; on the contrary, a clause of the art. prohibits the payment of any. Policies are indisputable except in cases of personation or proved fraud.

ALFRED AVERAGE ASSO. for British, Foreign, and Colonial Built Ships, founded in Lond. in the early part of 1866, on the principle of mut. asso., and passed into liq. in 1870. Mr. F. B. Smart is the liq.

ALFRED HOME AND FOREIGN LIFE ASSU. AND MUT. ANNU. ASSO., founded in 1839, with a cap. of £100,000, in 4000 shares of £25—£5 paid. The prosp. set forth the following special features:

The assu. may obtain loans upon a new and advantageous plan peculiar to this so., the Directors being empowered to employ its funds in making advances to parties effecting assu. for life with the Asso., upon security being given for the payment of the future prems. upon their pols., and for the int. payable on such loans. Thus, parties possessed of life interests and incomes, can, by assigning them as security, at once raise a proportionate capital.

Persons assu. the lives of others as security for money, or as nominees in leases and otherwise, may, by the payment of a small extra prem., be relieved from the risk of the party vitiating the policy by going abroad.

Annuities granted on an entirely new principle of parti. in profits. . . . The granting of annuities therefore is made a separate branch of the bus. By keeping the funds of the two estab. quite distinct, those of the annuitants are available for investments in such purchases and securities as are peculiarly suited to their objects.

The preceding clause about loans was modified in 1850, "the directors not being sure whether they possessed the power of lending money on personal security, as the Deed then stood." It was at the same time considered whether it was not desirable to make the co. mutual, but resolved not to do so at that time.

Mr. J. W. Hampton was sec., and Mr. Charles Jellicoe consulting act. In 1846 the co. was regis. under the Joint Stock Cos. Regis. Act, 1844. In 1858 it was amalg. with the *Eagle*.

ALGARUM MARIS, prob. a corruption of *Laganum maris*, *lagan* being a right in the middle ages, like *jetson* and *flotsam*, by which the goods thrown from a vessel in distress became the property of the king or the lord on whose shores they were stranded.—*Spelman*.

ALGEBRA.—An important branch of mathematics much used in actuarial calculations. It is sometimes called a universal arithmetic; but may be more appropriately described as a calculus of symbols. The symbols it employs are of three kinds: 1. Those of quantity known or unknown, which consist of ordinary numbers and letters of the alphabet. 2. Those of operation, which are arbitrary in design, but pretty uniform in practice. 3. Mere abbreviations for ordinary words. The combination of these symbols according to fixed laws leads to algebraical expressions or formulæ, in which actual computations are indicated rather than performed.

The systematic notation, to which algebra owes its chief power as an instrument of research, has been of very gradual growth, and is still being extended. In the first known treatise upon the subject by Diophantus, who prob. lived about A.D. 400, the few symbols employed were mere abbreviations for ordinary words. The Arabians, who obtained their algebra from the Hindoos, did little or nothing towards its extension; though their treatises, after being carried into Italy by a merchant of Pisa, Leonardo Bonacci (A.D. 1202), gave rise to important improvements. The first book on the subject was one by Lucas de Burgo, an Italian friar, and was pub. in Venice in 1494. Towards the middle of the 16th century algebra was intro. into Germany, France, and England, by Stifelius, Peletarius, and Robert Recorde respectively.

We shall pursue the subject under NOTATION, when we shall have occasion to note the improvements, and attempted improvements, by modern writers; among these some of our present actuaries.

ALGERINE PIRATES.—Persons have been disposed to think that the dangers of which we read as arising from the destruction of shipping and capture of the master by Algerine pirates—events regularly insured against several centuries ago—are more or less mythical. [CAPTIVITY, INS. AGAINST.] The following is a clause from the treaty with Great Britain and Algiers in 1700, confirmed by that of 1716:

No ship or vessel belonging to our government of Algiers shall cruize near or in sight of any of the roads, havens, or ports, towns or places belonging to the said King of Great Britain, or any way disturb the peace and commerce of the same; and in compliance with the 8th art. of the treaty of 1682, we do sincerely promise and declare that such orders shall for the future be given to all our commanders, that under a severe penalty, and our utmost displeasure, they shall not enter into the channel of England, nor come, or cruize in sight of any part of His Majesty of Great Britain's dominions any more for the time to come.

These pirates commenced their depredations about 1585.

ALIENATE, OR ALIENE.—To transfer property.

ALIENATION.—A transferring of property to another. Alienation, that is, to make alien, or to trans. from our ownership to that of another, or to trans. anything into the power of another.—*Coke upon Littleton*.

Many curious legal questions have arisen in connexion with the alienation of property insured against fire; more especially in the U.S. Courts—it being the custom in that country to insert a special stipulation that in the event of alienation of the property, the pol. shall be void. We may glance at one or two of the cases. In *Strong v. Manufacturers' Ins. Co.*, tried in Massachusetts in 1830, the policy contained a provision that if the property should be sold or conveyed in whole or in part, the policy should become void. The insured had executed mortgages upon the property embraced in the pol. prior to the ins.; these were foreclosed subsequent to the making of pol. leaving equity of redemption in insured at date of fire. The Court held that the insured had not been divested of his insurable interest by such foreclosure and sale, and that he might recover the whole amount of damage to the property, not exceeding the sum ins.

In the case of the *Etna Ins. Co. v. Tyler*, tried in the N.Y. Courts in 1836, it was held that if insured sell the property and part with all his interest therein before the loss

happens, the pol. is at end unless assigned to the purchaser with assent of co. ; but if he retains a partial interest in the property, the pol. will protect such interest, nothing therein being contrary to a change of interest or title.

In the case of *Trumbull v. Portage County Mut. Ins. Co.*, tried before the Ohio Courts in 1843, it was held that an agreement by the insured to convey the prems. ins. at a future day on payment of the purchase-money, is not such an alienation as to defeat a pol. where a loss occurs after the agreement and before the conveyance, and insured remains in possession of the property.

ALIENEE.—One to whom a trans. of property is made.

ALIENOR.—One who trans. property.

ALIENS.—Speaking generally, aliens are persons born in a foreign country out of the allegiance of the king. Aliens and foreigners generally were banished England in 1155, being thought too numerous. In 1483 they were restrained from exercising any trade or handicraft by retail. It was only as recently as 1844 that they were, by authority of 7 & 8 Vict. c. 66, authorized to hold personal property. Hence they were not in a position of security in taking out polys. of ins. before that date. The 10 & 11 Vict. c. 83, relates to aliens in the British colonies.

At the period when this country was at war with some of the leading powers of Europe, questions regarding the right of aliens very frequently arose, especially in connexion with Marine Ins. Some of the principles then settled may be briefly noted.

During war with the native country of an alien, his right to enforce a contract entered into previous to the commencement of the war is suspended until the restoration of peace ; and *a contract entered into during war is absolutely void*. It may be doubted, says Mr. Bunyon, whether if a policy of ins. were valid at its inception, but after the declaration of war the assured died in battle, contending against the forces of this country, his representatives could, even after peace was restored, recover upon it.

Out of these and similar questions the earlier writers upon jurisprudence set up the distinction between *alien friends* and *alien enemies*. An alien, not being an alien enemy, has been able at all times to effect an ins. upon his life and enforce the contract by an appropriate proceeding in any court of law or equity in this country ; and that although resident abroad at the time. But the life of an alien enemy cannot be insured even for the benefit of a British subject.

An alien resident in this country by permission of the Government will not be considered an alien enemy, and the Queen in her proclamation usually qualifies the declaration of war by permitting the subjects of the enemy resident here to continue so long as they peaceably demean themselves, and without doubt such persons are to be deemed as alien friends.

All these points have been more or less modified by the Act of 1844. Mr. Bunyon treats the subject very learnedly.

ALISON, DAVID, was sec. of *Indisputable* from its estab. down to its trans. to *Eagle* in 1857.

ALKALI WORKS.—By the 26 & 27 Vict. c. 124, the Alkali Act, 1863, "An Act for the more effectual condensation of muriatic acid gas in alkali works," certain special rules are laid down, inspectors are appointed, and penalties imposed. This Act was made perpetual by 26 & 27 Vict. c. 124. The health of large masses of the pop. depends upon the proper carrying out of these provisions.

ALLARDICE, GEORGE, was in 1844 sec. of *Scottish Marine*.

ALLEN, FREDERICK, was for some years representative of the *National Provident* in Bath and Bristol. He had previously been in the *Temperance Provident*. In 1862 he became manager of Lond. branch of the *Queen*. He afterwards retired from the ins. world.

ALLEN, J. ADAMS, M.D., LL.D., pub. in N.Y., several years since, *Medical Examinations for Life Ins.* It has now reached the 6th ed. Mr. Barnes says he has perused the book with "profit and pleasure."

ALLEN, JOSEPH, assistant sec. of *Gresham* since 1866. He entered the office in 1853, as a junior, and has worked through all the departments. Those who know Mr. Allen know how well suited he is for the arduous duties of his present position.

ALLEN, LEWIS, was for some years connected with the *National Provident*, and opened up some of its most important provincial branches. He died about 1857.

ALLEVIATOR FIRE AND LIFE.—A co. under this title was projected in 1852, but did not proceed. It afterwards took the name of *Adamant*, which see.

ALLIANCE BRIT. AND FOREIGN FIRE AND LIFE INS. CO., founded in 1824, with an authorized cap. of £5,000,000, in 50,000 shares of £100. The orig. prosp. says :

The object of this inst. is to combine the highest public utility with the greatest individual benefit to the proprietors. It is confidently expected that this will be attained in a greater degree than has ever yet been realized, owing to the extensive connexions, both foreign and domestic, of the parties with whom the Co. originates, and the large capital to be invested therein ; by means of which the Co. will be able to avail itself of every opportunity beneficial to its interests, and to defray its expenses with the least possible diminution of profits.

Certainly no ins. asso. ever was founded under more powerful auspices. Its presidents were John Irving, M.P., then one of the most important merchants in Lond., Francis Baring (Baring Brothers), Samuel Gurney (Overend, Gurney & Co.), N. M. Rothschild, and Moses Montefiore, Esquires. The shares of the Co. were in great demand, and rapidly rose to a considerable prem.

Every shareholder, as a condition of holding his shares, was required to insure a sum equal to the amount of his subscription in the Fire, or £1000 in the Life, department of the Co., int. to be paid to the proprietors of not less than 3 or more than 5 p.c. annually; and 5 p.c. of the profits annually to be applied in the purchase of shares, provided they could be purchased or redeemed at a prem. below £90 p. share, "thus benefiting the proprietary without diminishing the security of the public;" and a further sum equal to 15 p.c. of the profits to be employed in paying up the remaining 90 p.c. on the shares, until the whole cap. of £5,000,000 should be realized.

The remaining 80 p.c. of the annual profits to be invested by the trustees, and once in every 5 years to be divided between the proprietors and policy-holders in such proportion as the board of direction shall deem proper. No proprietor holding less than ten shares to attend annual meetings. All unemployed cap. beyond £20,000 to be from time to time invested in public securities. The prosp. also contained this clause:

The following is an outline of the plan upon which the inst. is intended to be conducted, which plan will be further matured by the Presidents and Directors under the ablest legal and professional advice, and will be completed in such a way as counsel may recommend, and the shares are tendered to the parties who have offered to subs. for them upon this express condition that all further details shall remain with the Presidents and Directors, and that the shareholders shall execute such deed or deeds as may be deemed requisite.

The condition implied in the above stipulation was introduced advisedly. The agreement between the orig. promoters had been "to form an assu. co. for the several purposes at that time allowable by law to assu. cos., and for such further purposes as by any alteration of the laws then in force should be allowable to assu. cos." In that same year (1824) an Act was passed—5 Geo. IV. c. 114—"to repeal so much of an Act of the 6 Geo. I. as restrains any other corps. than those in the Act named, and any sos. or partnerships from effecting Marine Ins. and lending money on bottomry." Hence the monopoly on Marine Ins. was removed, and it was open for any co. to enter upon that branch of bus. We need not be much surprised then to find the following recital in the preamble to the Deed of Sett.:

And whereas the board of direction of the said Co., by reason of the premises, have resolved to extend the object and bus. of the said Co. to assu. upon ships and goods and merchandises at sea, and to lending money upon bottomry; and have further resolved that such assu. shall be taken and the pols. thereof subs. by three or more directors, etc.

This proposed extension of the objects of the Co., although it was very clearly in the minds of the promoters when the first prosp. was issued—and which was indeed intended to be provided for by means of the clause we have already quoted—led to some serious litigation. A Mr. Natusch, we believe an underwriter at Lloyd's, objected to this extension of the bus. What followed we will take from the reported case on the subject—*Natusch v. Irving*. (See *Lindley on Partnership*.)

The plaintiff, Natusch, was one of the orig. subs. and held 15 shares, in respect of which he had paid the required deposit, but he had not executed the Deed of Sett. In conformity with the rules of the Co., he had effected a policy with it for £1500 on his life. Shortly after the repeal of 6 Geo. I., an adv. appeared in the newspapers stating that the Co. would commence the bus. of Marine Ins. The plaintiff, in answer to an inquiry whether this announcement was authorized by the Directors, was informed that it was; and that if he objected to the course about to be pursued, he might receive back his deposit and int. and have his policy cancelled and the prem. returned. In reply to this the plaintiff stated that he was ready to execute any deed which was in conformity with the prospectus; that he conceived it competent for him to insist that the bus. in which he was a partner should be carried on according to the agreement which united the partners together; that he could not think his doing so would entitle the manager of that partnership to pay him out his cap. and deprive him of a share in a concern of which he had the highest opinion; that he therefore required the Directors to abstain from any contracts or engagements relating to Marine Ins. as not being contemplated by himself, and those who joined the Co. upon the terms of the prosp.; and that he required an undivided attention on the part of the Directors to the objects defined therein. The plaintiff afterwards attended at the office of the Co. to execute its D. of Sett., but finding that it contained provisions enabling the Co. to carry on the bus. of Marine Ins. he refused to execute it as not being conformable to the terms on which the Co. was formed. In pursuance of the adv., the Co. had commenced and it was carrying on the bus. of Marine Ins.; but there was no evidence to show acquiescence on the part of the plaintiff, and there was evidence to show continued opposition by him to the carrying on of such bus. The plaintiff applied for an injunction to restrain the Directors from effecting Marine Ins., and an injunction was granted.

Lord Eldon made (*inter alia*) the following remarks on the occasion:—

If six persons joined in a partnership of L. assu., it seems clear that neither the majority nor any select part of them, nor five out of the six, could engage that partnership in Marine Ins., unless the contract of partnership expressly or impliedly gave that power: because if this was otherwise, an individual or individuals, by engaging in one specified concern, might be implicated in any other concern whatever, however different in its nature, against his consent. . . . Courts must struggle to prevent particular members of those bodies from engaging other members in projects in which they have not consented to be engaged, or the engaging in which they have not encouraged, assented to, or empowered or acquiesced in, expressly or tacitly, so as to make it not equitable that they should seek to restrain them. The principles which a Court would act upon in the case of a partnership of six must, as far as the nature of things will admit, be applied to a partnership of 600. . . .

The estab. of the ALLIANCE MARINE was the immediate and very just consequence of this opposition.

The Co. in 1824 obtained a special Act of Parl., 5 Geo. IV. c. cxxxvii., "An Act for enabling the *Alliance* Brit. and Foreign L. and F. Assu. Co. to sue and be sued in the name of the chairman for the time being, or of any other member of the Co.," and by that

act—which contained no provisions as to Marine Ins.—the several persons who had taken and accepted shares were formed into a Co.

The Deed of Sett. contained this clause—prob. taken from the deed of the *Equitable* :

80.—That whenever a sudden increase of deaths shall happen in consequence of the plague or any contagious or epidemic disorder, or of famine, invasion, or civil war, it shall be lawful for the board of direction, with the approbation of an Extraordinary General Court to be called by them for that purpose, to defer the payment of the whole or any part of the sum to be claimed under each policy issued by the Co. for assu. any life which shall expire during the prevalence of such plague, contagious, or epidemic disorder, famine, invasion, or civil war, until such time as an adequate supply for the payment thereof can be obtained out of the funds of the Co.

Separate accounts were to be kept of the various branches of the Co.'s bus., and the deed contains very full provisions as to the disposal of the profits of each department. Some variations have been subsequently made, generally in favour of policy-holders.

A later prosp. stated —

The profits of the Fire department appropriated to the ins. will be distributed at the close of each successive period of five years, in the form of a per-centage on the prems. which have been paid. Parties who obtain the settlement of losses from fire are not thereby deprived of their right to participate in the profits of the Co.

This is in conformity with clause III of deed.

There is a tradition concerning the circumstances which led to the formation of this office too characteristic of one of its founders to be passed over. Mr. Benjamin Gompertz, at that time a well-known mathematician, although he afterwards became more famous, had been a candidate for the actuaryship of the *Guardian* Ins. Co., founded a year or two previously. He had not been successful, it was rumoured (probably quite erroneously) from the fact of his being a Jew. He sought out on 'Change his brother-in-law, the famous Nathan Meyer Rothschild, told him of his non-success, and of the probable cause. The reply was, "Not select you because of your religion—mine got! den I vil make a bigger office for you den any of dem." Mr. Gompertz was appointed actuary of the Co. under its D. of Sett. In a very interesting memoir of that gentleman, from the pen of Mr. Marcus N. Adler, there occurs the following passage relating to his appointment and its duties :

Having had only one month allowed him to prepare all the rates and regulations of the Co., he without hesitation adopted the *Carlisle* Table of Mort., which he found satisfactorily to agree with the *Equitable* experience. The office under his guidance made most satisfactory progress. One measure the directors of his co. were most anxious to promote at the time—viz., to compete with Government as to the grant of annuities. This he opposed strenuously. The terms on which the Gov. were granting these annuities were based on the *Northampton* Table, which, though safe enough for assu., could not but entail ruinous consequences with regard to annu. Eventually he even convinced the able Government actuary, Mr. John Finlaison, of the heavy loss that was caused by using these Tables; and in the year 1829 those rates were superseded by the higher ones based on the mort. experienced by Government annuitants.

So, again, it was the intention of the directors to grant endowments for children on the commencement of the business of the office; but on the advice of their actuary, Mr. Gompertz—advice given because he considered the recorded experience regarding all the earlier ages of life very defective—they refrained, and have never issued them.

The *Edinburgh Review* of March, 1827, speaking of the fact that but one life ins. so. then existed in Germany, expressed a belief that the practice of life ins. would rapidly extend if a so. were formed on such a scale as to attract notice, adds :

In the absence of such an inst., recourse is had in many places to the *Alliance* Ass. Co., which has estab. agencies in many of the principal cities, and in which confidence is reposed; partly, it may be, on account of the large capital invested in the undertaking, but chiefly from the names of some of its principal supporters being universally known in the mercantile world.

In 1841 the Co. found itself to be defendant in an action upon a Life pol. for £1,500 effected on the life of one Howes. The case stands in the law books as *Palmer and Fish (executors) v. Chairman of Alliance Co.* The direction of the Judge to the Jury, after hearing the plaintiff's case, will sufficiently indicate the points upon which the Co. resisted payment.

Gentlemen, you will find a verdict on the seventh issue, and you will be discharged from finding any verdict upon the other issues, that is to say, you will find—That the policy was effected by the fraud, covin, and misrepresentation of the party Howes.

This was the first time the Co. had resisted payment of a policy.

In 1848 the Co. took over the Fire bus. of the *Ins. Co. of Scotland*, which it has since carried on as a branch; but according to Scotch law, that Co. having been chartered, the orig. name is retained.

We may state here, that while the Co. has taken over the bus. of several other Fire offices, it has never taken the bus. of any Life office.

In 1850 the Co. entered into an arrangement with the *Suffolk and General County Amicable* Ins. Co. for a transfer of the bus. of that Co. to a new Co., to be called the *Suffolk Alliance* Fire and Life Assu. Co., in consideration of which the *Alliance* F. and L. was to pay the sum of £65,000 in money, and 3421 shares in its capital stock; and then carry on the newly-created Co. for its own benefit. The arrangement was confirmed by authority of a special Act, 13 & 14 Vict. c. i. The bus. now carried on at Ipswich and at Bury St. Edmunds are simply branches of the *Alliance* Fire and Life.

About 1852 some proceedings were taken against the Co. by a Mr. Van Sandau, a policy-holder, with a view to compel the Directors to distribute amongst the parti. policy-holders a larger proportion of the profits of the Co. than they (the Directors) had thought it expedient to do. The proceedings (known as *Van Sandau v. Gurney*) never came to any issue; but the Directors appear to have taken the subject into consideration, with a view to some modification of the provisions of the deed.

By special resolution of a General Court, held 7th May, 1856, an alteration was made in the method of distributing the profits of the Life branch. Four-fifths were appropriated to parti. policies. The remaining fifth to the shareholders.

In 1865 the Co. took over the Fire businesses of the following offices:—1. *District Fire* (Birmingham); 2. *Hants. Sussex and Dorset* (Gosport); 3. *Sheffield Fire*. These were simple trans.; the *Alliance* having purchased the goodwill in each case.

At the close of 1868 the Co. had Life ins. contracts in force amounting to £3,173,983; and its Life reserved fund was £943,000—exclusive of paid-up cap. of £550,000. The Fire fund stood at about £200,000, making total funds £1,600,000 invested, and yielding int. at an average rate exceeding 4½ p.c. The general features of the Co. are liberal. Its management sound and economic. Expenses of management less than 8 p.c. on Life income, and only 1 p.c. of Life reserve fund.

A remarkable circumstance occurred several years since in this Co. A German nobleman, who had been ins. in the office for a considerable sum, but for a few years only, died, and by his will directed his executors to give a discharge to the Co. on receiving a return of the premis. he had paid and 3 p.c. int. added. The Directors of the Co. were naturally surprised, but complied with the directions of the will; indeed, they could hardly have obtained a proper discharge for any larger sum. The motives for such a unique determination afford play for the imagination. The same life was ins. in the *London Life* and *Metropolitan*, the policies were of longer date, but the same directions applied also to them.

From every point of view the *Alliance F. and L.* must be considered one of the most solid ins. inst. we have in this country.

ALLIANCE FIRE AND LIFE AND MARINE INS. CO. (IRELAND).—This Co. was founded in Dublin in 1825, and carried on bus. until it had lost all its cap. and about £20,000 in add., when it closed its doors, about the year 1836. It paid for Marine policy stamps in the year just named £364 4s. 3d., which was small. The amount of its Fire duty we cannot ascertain, as at the period the duties of the Irish F. offices were all lumped in one sum. Its policies are said to have been trans. to *North of Ireland*, but we do not find a Co. bearing such a title.

ALLIANCE MARINE ASSU. CO., founded in Lond. in 1825, with an authorized cap. of £5,000,000, in 50,000 shares of £100. The directors were to be at liberty to lay out any portion of the profits in purchasing shares of the Co. for the benefit of the shareholders, or in augmenting the deposited cap. of the Co. until the whole £5,000,000 be paid up (cap. since reduced, 1840).

The existence of this Co. is due to circumstances which we have already explained under hist. of *Alliance*, etc., F. and L.; and the original prosp. of this Co. contained the following:

Pursuant to an original understanding and arrangement, the board of direction will have full power to adopt the Marine bus. heretofore transacted by the *Alliance*, etc., Life and Fire Assu. Co.; and also that transacted by Mr. N. M. Rothschild for the account and on the responsibility of the Co. The bus. of the Co. will consist in the assu. of British and foreign property against all usual Marine risks, and in lending money upon bottomry and *respondentia*.

The D. of Sett. of the Co., after giving power to the Board to grant ins., etc., on such terms and regulations as the Board should think fit, imposed this limitation (clause 51):

Save that no assu. of ships, or goods and merchandises at sea shall at any time hereafter be effected by any country or foreign agent of the Co., or by any committee or board estab. abroad or in any provincial city or town in Gt. Brit. or Ireland, nor in any other place nor in any other manner than at the head office of the Co.

This clause was modified in 1850, and the Directors were allowed agencies "under such limitations and restrictions as they might think necessary."

Clause 70 provided that portions of the profits should from time to time be applied to paying up the uncalled cap. of the Co. until the whole £5,000,000 of cap. became paid up. Clause 71 gave the directors power to buy up the shares of the Co.

A special Act of Parl. was obtained in 1825, 6 Geo. IV. c. ccii., "An Act for enabling the *Alliance* Marine Assu. Co. to sue and be sued in the name of the Chairman for the time being, or of any other member of the Co." The act obtained the Royal Assent the 6th July, 1825. The D. of Sett. of the Co. was set forth *in extenso* in a schedule to the Act, and was declared by sec. 4 of the Act to be irrevocable. Any member might sue the Chairman for money due from Co., and the Chairman might sue other members for their proportions. The Co. was not to be incorp. by the Act.

In 1834 the Co. obtained another special Act, 4 & 5 Wm. IV. c. xxxiv., "An Act to repeal an Act passed in the 6th year of the reign of his late Majesty King Geo. IV., intituled, etc., and for granting certain powers to the said Co. instead thereof." This Act recited:

And whereas certain of the enactments and provisions of the said recital act have been found

defective and inconvenient, and it is expedient the said recital act should be repealed, and more effectual powers and provisions granted and enacted for the regulation of the said Co. instead thereof.

The D. of Sett. was not this time made any part of the Act, and it could therefore be altered from time to time as might seem expedient without reference to Parl. There was nothing other than the ordinary clauses in this new Act.

In 1840 the cap. of the Co. was reduced to £1,000,000, in 10,000 shares of £100; £25 per share being paid up. That is, each proprietor had 1 new share for each 5 former shares. This was a very prudent step. The new shares were for a time called "Consolidated shares."

ALLIN, GEORGE.—Manager of *London and Westminster Plate-Glass*; was formerly district man. for *Brit. Empire Mut.* at St. Alban's, for which Co. he transacted a considerable bus. retired in 1867, and for a short period represented the *Gresham* as agency superintendent.

ALLISION, the running of one vessel against another.

ALLOCATION OF PROFITS.—The distributing rateably, and placing to the credit of the various policy-holders of the parti. class the proportion of profits to which they are severally entitled. In law the word has several significations.

ALLOPATHY.—A term recently invented to describe the ordinary system of medical practice in opposition to Homœopathy.

ALL OTHER PERILS, LOSSES, AND MISFORTUNES.—The policy of Marine Ins. generally in use in Gt. Brit., after enumerating the particular risk insured against, contains these words, "and of all other perils, losses, and misfortunes that have or shall come to the hurt, detriment, or damage of the said goods and merchandises, and ship, etc., or any part thereof."

The terms of this clause are so comprehensive that they might be supposed to embrace every species of mishap not already particularized to which property at sea can be subjected. This, however, is not the case. The foundation of marine ins., as already stated, must be accident; and the "perils, losses, and misfortunes," above referred to, only include such as arise from similar causes, and are of like kind with those previously mentioned. It has been held that this general indemnification includes the risk of loss by land-carriage, when specified in the policy; damage to a ship heeled over by the wind in a graving dock; loss of dollars jettisoned from a vessel in imminent danger of capture, to prevent their falling into the hands of the adversary; loss by one British ship firing upon and sinking another on the supposition that she was an enemy's vessel, etc. But while the clause is efficacious to cover these and parallel instances of loss, it will not extend to the admission of casualties, which are excluded from the contract by the memorandum at the foot of the pol., only the general limitations of the underwriter's liability prescribed by law and custom.—*Hopkins; Arnould; McArthur.*

ALL-WORLD POLICIES.—See **WHOLE-WORLD POLICIES.**

ALLOTMENT INS.—A new species of ins. arose out of the mania for allotments in various enterprises during the South Sea period in 1720, which, for the want of any better title, we designate Allotment Ins. Its application may be seen from the following advertisement in *Daily Courant*, 6th June, 1720:

Whereas a subs. has been privately taken on a roll of parchment by gentlemen concerned in the cotton manufacture of Lancashire for £2,000,000 for the making of English calicoes. This is to give notice, that printed sealed tickets of assurance of subscription will be delivered to the gentlemen subs. this day at 10 a.m., at the Ship Tavern, behind the Royal Exchange in Threadneedle St.—N.B. No tickets will be delivered to any but the subs. in person.

The subs. being so assured would become a property capable of being dealt with. This seems to have been the idea.

ALLOTMENT, LETTER OF. See **LETTER OF ALLOTMENT.**

ALLOTTEE, a person to whom land under an Inclosure Act, or shares in a public undertaking, are allotted.

ALLOWANCE, a deduction, an average payment, a portion. In commerce this word bears several technical meanings, a knowledge of which may be very essential in the adjustment of losses under Marine ins. policies.

ALLY.—A power in alliance with us.

ALMA LIFE INS. CO.—A scheme projected in 1854 very soon after the famous battle of the Alma. The battle was a fact, and a brilliant one. The Co. was but a name. Its connexions merged into the *Clarence*.

ALPHABET LETTERS.—A scheme of ins. under the title of "Alphabet Letters" was instituted in Lond. in 1711, with a view to evade the Gambling Act of the preceding year. We shall give some account of these schemes under head of **GAMBLING INS.**

ALPHA REVERSIONARY INVESTMENT SO. LIM. projected in 1871, with an authorized cap. of £100,000, in 10,000 shares of £10. The objects of the asso. are the purchasing of reversions, life ins. policies, and for granting loans thereon. Mr. Wm. Young, M.A., is the promoter of the Co. The scheme has some good features.

ALPHA UNITED LIFE INVESTMENT CO.—This Co. was projected in 1845, but it never got beyond the stage of prov. regis.

ALTERATION IN ARTICLES OF ASSOCIATION.—Every co. regis. under the Cos. Act, 1862, may by "special resolution" of a general meeting alter its regulations as contained in its

art. of asso.; but it cannot thereby enlarge the scope of its bus. beyond the objects in the orig. memorandum of asso.

ALTERATION IN NAME OF CO.—Any co. regis. under Cos. Act, 1862, may, with the sanction of a "special resolution" of the co., and with the approval of the Board of Trade, alter or change the name of the co.

ALTERATION OF POLICY, VOYAGE, OR RISK.—Whenever it may be requisite to make any alteration, erasement, addition, or interlineation in a policy after it has been underwritten, it ought to be done with caution and accuracy, and a mutually clear understanding between the parties. For otherwise, if it varies at all from the insured's order, or the insurer's entry, disagreements of moment may arise, and be sometimes troublesome to adjust; yet such alterations are very often made by brokers in a manner so very loose and hasty, and with so little attention of the underwriters, that the nature of the risk originally described in the policy, is sometimes, by the introduction or erasement of a single word, or monosyllable only (without any alteration of the prem.), rendered entirely different from what is understood, or perceived by the underwriters, till the subsequent effect of it in some unfavourable event opens their eyes.—*Weskett*, 1781. The same may be said at the present time, although nearly a century of litigation has since passed.

ALTERATIONS IN STRUCTURE OR USE OF BUILDINGS (F. INS.).—The subject of alterations, after the date of the policy, in the structure or use of the buildings, either as regards the trades carried on, or the goods deposited in them, has been of all others the most fruitful of disputes between the assurers and the assured. In the decided cases the question has generally turned upon the construction of the conditions, and the F. offices, tutored by experience, certainly endeavour to guard themselves in every possible manner against unanticipated hazards. In spite, however, of the ingenuity of their advisers, cases must occasionally arise to which no condition is applicable, and the question remains for solution, how far an alteration, not expressly forbidden, affects the contract.—*Bunyon*, *Law of Fire Ins.*

Managers, surveyors, agents, and assessors of F. offices, all require to bring their attention to bear very closely upon this subject.

It may be useful to give a brief digest of several decisions before the U.S. Courts on points coming under this head:

In the case of *Curry v. Commonwealth Ins. Co.*, tried in 1830, it was held that an alteration or enlargement of a building will not avoid the pol. unless the risk be thereby increased—which must be determined by the jury. In the case of *Jones Manufacturing Co. v. Manufacturers Mut. Ins. Co.*, tried in 1851, where there had been an alteration of the stove and smoke pipe, the Judge instructed the jury that if the alteration increased the risk, the pol. would be void. On appeal it was held that this instruction was correct. In the case of *Padleford v. Providence Mut. Ins. Co.*, tried in 1855, where under a provision in the charter of the Co. against "alterations by the act of the proprietor without add. prem.," etc., it was held that an alteration made by a tenant without the consent or authority of the proprietor, would not avoid the policy; and it was a question for the jury to determine how far the proprietor had authorized the alteration made by the tenant.—*Digest of Fire Ins. Decisions*, 2nd ed. [INCREASE OF RISK.] [WARRANTY.]

ALTRINCHAM CATTLE PLAGUE INS. ASSO. was founded at Nutsford, in Cheshire, in 1865, the liability of the members being limited by guarantee.

AMADOR, M. RISUENO D', a French writer, who in 1837 pub. a memoir, in which he endeavoured to apply the doctrine of prob. to measure the law of disease. Violent discussions took place upon the subject at that period; whether it has since made any progress we cannot learn.

AMALFITAN [AMALPHITAN] CODE OR TABLE.—A collection of Sea Laws compiled about A.D. 1063. It consists of the laws on maritime subjects, which were or had been in force in countries bordering on the Mediterranean; and probably on account of their being collected into one regular system, it was for a long time received as authority in those countries.

Anderson says that the city of Amalfi was about the year 1020 so famous for its merchants and ships, that the Caliph of Egypt granted its inhabitants a safe conduct to enable them to trade freely in his dominions. They also obtained other distinguished privileges. The city itself is said to have been founded by a party of Roman emigrants about the year A.D. 350. Hardly a trace of its former greatness now remains.

Their new code appears to have superseded in a great measure the ancient Rhodian Law. Its authority was acknowledged by all the states of Italy during several centuries. The High Court of Admiralty of Amalfi even obtained authority and sanction as a tribunal of nations. This code was ultimately itself superseded by the CONSOLATO DEL MARE. [MARINE INS.]

AMALGAMATE.—To mix or incorporate.—*Richardson*. To mix so as to make a compound.—*Webster*. To form a union, combine with something different.—*Smart*.

V.C. Wood remarked in the case of the *Empire and City and County*: "It is difficult to say what the word amalg. means. I have not the least conception of what the full legal effect of the word is. We do not find it in any law dictionary, or expounded by any competent authority; . . . it seems to be a process of annihilation or extinction, rather than anything else." This is the dictum of a very learned and clear-sighted man, but requires to be qualified to this extent, that none but amalg. producing disastrous consequences, or illegally or defectively carried out, were likely to come before him.

We venture to submit this definition : To amalg. is to fuse the interests of two or more bodies theretofore distinct and separate, so as that they, by the process, become one.

AMALGAMATION : Act of amalgamating ; state of being amalgamated.—*Worcester*. The union of the businesses of two or more ins. cos.—*Ins. Agent*. A remedy when the supply of offices exceeds the demand.—*Hand-Book of Assu.*

All ins. asso. that are not strictly mut. in their constitution are necessarily composed of two classes of persons—1. Shareholders ; 2. Policy-holders. A *complete* amalg. of two or more offices, other than mut., must therefore comprehend a fusion of the interests of each of these classes, with the interests of the same class in each of the asso. forming the subject of amalg. Very few of such cases have occurred ; very few could possibly arise.

Certainly two or more purely mut. asso. may perfect an amalg. to the extent that from a given day each and every member of the two or more asso. should have equal rights, benefits, and advantages, from one common fund, provided by the amalg. asso. But even to carry out such an arrangement, on an equitable basis, each of the amalg. asso. must contribute its just proportion to such common fund, as determined by a valuation of all the ins. contracts of each ; and the rates of prem. to be paid from the date of amalg. must be equal (unless any difference shall have been taken into account in valuing the contribution to the general fund), and the conditions of the policies uniform. We venture to think but few such cases have arisen in practice.

But an amalg. may be either *partial* or *complete*. A complete amalg. may arise under the conditions we have named in mut. asso. It would be possible also for two or more proprietary offices to be so circumstanced as to justify the term amalg. to be applied to their union. But the chances are much further removed by the fact that the share and policy-holders must each, and in each co., have their rights and interests equitably adjusted and provided for. Wherever and whenever the interest of both share and policy-holders are not regarded, the amalg. is only partial.

Partial amalg. may be said to be the rule—*complete* ones the exception. It almost always happens that one set of shareholders are either bought out, or left out of the arrangement. If a Life Co. falls into difficulties, the shareholders, as a rule, know and feel that the sacrifice must be with them ; the policy-holders must be provided for at the expense of that sacrifice. It may even be that the interests of the shareholders, who seem to be the victims, may not have been disregarded in the arrangement. The sacrifice of past payments for the avoidance of future ones may have embodied the *quid pro quo* ; and the arrangement may be equitable and desirable, although it is no longer an amalg. In many cases the interests of the shareholders on one side are bought out by a cash payment. The transaction then assumes the nature or transfer of the ins. contracts from the selling to the purchasing co. It is not strictly an amalg. But if the purchase consideration be paid in shares of the purchasing co., then it may become a complete amalg., because all the interests will be *pro rata* on the common funds.

Another set of circumstances have next to be regarded, viz., that many ins. asso. have no legal powers in their existing constitutions for any such purpose. Most asso. have power to purchase a bus. or businesses ; very many have no power whatever to sell their own. We shall therefore proceed to a consideration of the *legal conditions* involved in an amalg. or a transfer of the bus. of an ins. asso.

We have directed our preceding observations mainly to amalg. of Life Asso. There have been very few real amalg. between Marine, Fire, or Accident Ins. Offices. In all cases of yearly or short-term contracts, it is usually a trans. of bus. only, for a consideration paid down or extended over a term of years.

In all cases of amalg. or trans. the question of goodwill enters more or less into account. [GOODWILL]

The earliest attempts at amalg. were made during the years 1719 and 1720—South-sea period—when several of the projected MARINE Ins. Asso. merged into each other, by way of amalg. their forces in the competition then going on to obtain charters of incorp. There had been something of the same process carried on by the Birth and Marriage Ins. Offices between 1709 and 1712 ; but these were not asso. at all. They were simply offices opened and kept by individuals at their own risk and for their own advantage.

Some further definition of terms seems to become necessary at this point. An *amalg.* appears to imply, as we have already said, a union of two or more estab. offices. Projects, before they have assumed tangible shape and form, may “merge” into each other ; the weaker ones becoming “absorbed” in the stronger.

By the General Law an amalg. cannot be effected without the aid of Parl. Each co. has its distinct name, its separate cap., and separate creditors, and no act of a majority, however large, can compel a minority, though it consists of only one shareholder, to enter into obligations inconsistent with the separate status of the co. to which it belongs. The statute law has of late years been gradually aiming at a modification of this principle.

The Joint Stock Cos. Act, 1857, 20 & 21 Vict. c. 14, which, however, did not apply to Ins. Assn., in sec. 17 recognized the principle of amalg. without making use of the term. The Cos. Act of 1862 extends the principles to *all* Asso. which shall become regis. under it : hence it includes Ins. Asso. The following are the clauses relating to amalg. :—

SEC. 161.—Where any co. is proposed to be or is in the course of being wound up altogether volun-

tarily, and the whole or a portion of its bus. or property is proposed to be transferred or sold to another co., the liq. of the first-mentioned co. may, with the sanction of a special resolution of the co. by whom they were appointed, conferring either a general authority on the liq., or an authority in respect of any particular arrangement, *receive in compensation or part compensation for such transfer or sale shares, policies or other like interests in such other co.*, for the purpose of distribution amongst the members of the co. being wound up, or may enter into any other arrangement whereby the members of the co. being wound up may, in lieu of receiving cash, shares, policies, or other like interests, or in addition thereto, *participate in the profits of or receive any other benefit from the purchasing co.*; and any sale made or arrangement entered into by the liq. in pursuance of this sec. shall be binding on the members of the co. being wound up: subject to this proviso, that if any member of the co. being wound up, who has not voted in favour of the special resolution passed by the co. of which he is a member, at either of the meetings held for passing the same, *expresses his dissent* from any such special resolution in writing addressed to the liq. or one of them, and left at the registered office of the co. not later than seven days after the date of the meeting at which such special resolution was passed, such dissentient member may require the liq. to do one of the following things as the liq. may prefer: that is to say, either to *abstain from carrying such resolution into effect*, or to *purchase the interest held by such dissentient member* at a price to be determined in manner hereinafter mentioned, such purchase-money to be paid before the co. is dissolved, and to be raised by the liq. in such manner as may be determined by *special resolution*: No special resolution shall be deemed invalid for the purposes of this section by reason that it is passed antecedently to or concurrently with any resolution for winding up the co. or for appointing liquidators; but *if an order be made within a year for winding up the co. by or subject to the supervision of the court, such resolution shall not be of any validity unless it is sanctioned by the court.*

SEC. 162.—The price to be paid for the purchase of the interest of any dissentient member may be determined by agreement, but if the parties dispute about the same, such dispute shall be settled by arbitration, and for the purposes of such arbitration the provisions of the "Cos. Clauses Consolidation Act, 1845," with respect to the settlement of disputes by arbitration, shall be incorp. with this Act; and in the construction of such provisions this Act shall be deemed to be the special Act, and the co. shall mean that which is being wound up; and any appointment by the said incorp. provisions, directed to be made under the hand of the secretary, or any two of the directors, may be made under the hand of the liq., if only one, or of any two or more of the liquidators, if more than one.

It will be seen that these sections only apply to the cos. being liquidated voluntarily. If two cos. therefore desire to amalg., one at least must place itself in voluntary liq.; and if from any cause it afterwards passes into a winding-up under the Court, all that has been done must receive the sanction of the Court, or it will be void. [VOLUNTARY WINDING-UP.]

The clauses, as we have pointed out, only apply to asso. regis. under the Cos. Act, 1862, and as a large majority of ins. asso. are so constituted that they *cannot* regis. under that Act, except for the purpose of winding-up, the facilities for amalg. are not much extended by its aid, except in the mode we shall proceed to point out. Sec. 180 of the Act defines what cos. *may* register under it. [LEGISLATION for INS. ASSO.]

The method by which an amalg. can be carried out as the law now stands, between two cos. regis., or capable of being regis., under the Cos. Act, 1862, is as follows: Suppose Co. A. and Co. B. are desirous of amalg.; they register under the Act, and Co. A. passes special resolutions containing not merely a declaration that the Co. is to be wound up, but stating the very arrangements that have been entered into with Co. B. The liq. will then proceed to wind up Co. A. If any member dissents, he must be dealt with under the clauses already quoted; and the arrangements may then be completed—subject to certain special requirements of the Life Assu. Cos. Act, 1870, of which we shall hereafter speak.

In the case here put, Co. B. is supposed to be legally capable of purchasing the property of Co. A., by virtue of the provisions of its own constitution. If that be not the case, a further step is taken. A third co. is formed, having powers to purchase the property of each of the orig. Cos. A. and B. The orig. cos. proceed to pass special resolutions dissolving themselves, and declaring the terms on which their members engage to become members of the new co.; and as soon as the dissolution of the orig. cos. is completed, their members, as a matter of course, become members of the new co. This process has in several cases been adopted with success.

The question immediately suggests itself: why adopt this indirect method of effecting what might be done directly, by enacting that cos. should be at liberty to amalg. with the sanction of special resolutions of their members? The answer, from a legal point of view, is, that if an alteration in the separate status of a co. were permitted without compelling the co. to dissolve itself, creditors would constantly be defrauded, and members be entrapped into arrangements possibly detrimental to their interests. The Act, by interposing the necessity of a dissolution, provides for the payment of creditors before amalg. can be effected, whilst it enables a shareholder, who dissents from the opinion of the majority, to retire from the co., and to receive the market value of his shares.—*Thring.*

The author believes that the most successful amalgamations have been those in which the requisite powers have been assumed on both sides, and the arrangements carried out with such completeness that all parties have been bound by acquiescence, the shareholders in the amalg. co. by the acceptance of new shares, or at least dividends, from the purchasing co., and the policy-holders by paying their prems. to the latter, and either accepting new policies, or having their old ones endorsed, with a memorandum of the transfer.—*Bunyon.*

It will be observed that in describing the legal *process* of amalg. we have dealt mainly with the position of shareholders. We have next to approach the more extended, and, in the case of ins. asso., the far more important interests of the policy-holders. Upon this

question the legislature has hitherto remained silent ; but from the courts there are decisions in abundance.

We may at this point quote a passage from Bunyon's *Law of Life Assu.*, which affords a philosophical explanation of much which is to follow :

The liabilities of ins. cos. vary in kind from those of almost any other co. ; they are liabilities undertaken to be performed at future and perhaps very distant dates, and although susceptible of valuation with some accuracy in the mass, are in detail scarcely capable of valuation at all. For example, if the liabilities of an office are represented by one or five millions insured, an actuary can tell very nearly what sum of money, in addition to the annually accruing premiums, will eventually pay the claims ; but if we take the case of a single policy, effected on the life of a person now become infirm, or perhaps lying at death's door, and for an amount absolutely necessary at his death to provide for the renewal of a lease, and the preservation of a valuable family property, who can say what sum short of the whole amount assured can compensate for its loss or surrender. And hence it follows, that the only way in which the liabilities of an ins. co. can be fairly met is by inducing another co. to undertake them, or in other words by an amalgamation or transfer. . . . The mode by which the affairs of a life office are met by the Court of Chancery in the case of a compulsory winding-up appears to be this : treating the pols. and annu. granted as claims to be valued, as upon a bankruptcy, and giving to the individual holders the estimated value as upon an actuary's valuation upon the day upon which the co. closed its bus.

The form of an order on the subject of immature ins. is given in the case of *Evans v. Coventry* (re *London Mutual*) directing an inquiry : "What ins. were in existence on the day when the co. closed its business, distinguishing whether for life, or during sickness, or for money payable at a deferred period, and what annuities were then in existence, and whether then payable or deferred, and in whose favour, and who were then and are now entitled to the benefit of those ins. and annuities, and what was then the value of such ins. and annuities respectively." . . . This may be scant justice to persons whose health will not allow them to insure elsewhere ; while to others who may be able at once to effect policies in a solvent co., it may give more than the values their policies might otherwise realize, since an ins. co. never purchases its pol. at their full value, and at the auction mart they might be worthless. [ALBERT ARBITRATION.]

We propose now to review some of the more important cases of amalg. which have come before our law courts, stating the leading points involved in each. We also propose to quote the several authors who have written upon the subject, and it will be more convenient to proceed in chronological order, as we may thereby trace the development of the principles enunciated. On the whole, the courts of law have certainly been favourable to amalg.

In the case of *King v. Accumulative Assu. Co.*, decided in the Exchequer Chamber, 1857, the important point was raised : How far the concurrence of the policy-holders is necessary to a trans. of business ? We give the principal points of the ruling, this being now regarded as a leading case.

Cockburn, C. J. : There is no implied covenant in a policy, on the part of the grantors, to continue the bus. of an ins. co. It has been contended, that such an implied covenant arises on that part of the policy, which provides that "the capital stock and other the securities, funds, and property of the said co. remaining, at the time of any claim or demand made, unapplied and undisposed of, and inapplicable to prior claims and demands in pursuance of the provisions of the Deed of Sett., shall alone be liable to answer and make good all claims, etc., under or by virtue of this policy ; and that no director, officer, or shareholder, etc., shall be in any wise individually or personally liable, etc., beyond the amount unpaid of his shares." It seems to me, all that was intended by that proviso was, to protect the shareholders from individual and personal liability to the holders of policies. It was evidently introduced, not for the purpose of enlarging the security and extending the remedy of the policy-holder, but precisely the reverse.

Williams, J. : It seems to me to be impossible to say, that the policy amounts to anything more than a contract, that the plaintiff or his executors shall receive the sum assured, when the time for payment shall have arrived. It is difficult to imply from the circumstance of the policy-holder being entitled to a share of profits, a contract on the part of the co. that they will, in order to give him a better chance of profits, continue to carry on the business, supposing it should turn out to be disadvantageous to them to do so.

Crowder, J. : What injury has the plaintiff sustained ? It may very well be that the co. were in a bad way, and that the new co. are much more likely to meet the claims of the policy-holders, when the proper time arrives. This has been very properly characterized as an action *quia timet*. When the event assured against has happened, and not till then, the plaintiff or his representatives will be entitled to enforce the policy.

Willes, J. : There is no contract by the defendants with the plaintiff, that they will not alien or transfer their funds.

It would be difficult to conceive anything more clear and distinct than the principles here laid down.

In the case of *Ernest v. Nicholls*, arising out of an amalg. between the *Sea, Fire, Life*, and the *Port of London Co.* (Ernest being official manager of the former, and Nicholls the official manager of the latter), which came before the House of Lords in 1857, on appeal from the Lords Justices, the Lord Chancellor said in delivering judgment :

Your lordships will observe that the transaction in question was a purchase by the one co. of the goodwill and the whole concern of the other. That would ordinarily speaking be a transaction in which no co. would be justified in engaging, because it certainly cannot be said to be within the ordinary scope of the object of any co. to purchase the goodwill of another. But all question upon that head is removed by a clause that there is in the deed under which the *Sea, Fire, Life Assu. So.* was constituted, and which expressly authorized such a transaction.

This was really *obiter dicta*, not being necessarily involved in the question before the Court.

In February, 1858, Mr. Jellicoe submitted to the Inst. of Actuaries a paper : *On the Principles which should govern Assu. Cos. in amalg.* The learned gentleman prefaced his paper by saying that the subject was one "as to which a good deal of misapprehension exists," and then proceeded :—

An impression, I believe, very commonly prevails that combinations of the nature in question are little better than rude and arbitrary arrangements, in which the rights of the several parties concerned are not much regarded, and which are usually carried out by sacrificing more or less the interests of one class in those of another. I propose now to show that such is by no means the case—that these arrangements are susceptible of the nicest and most accurate adjustment—that the advantages derived from them are appreciable with great exactness, and that the rights of all concerned may be most scrupulously maintained. It is true that details being somewhat complicated, persons unfamiliar with such subjects are not very well able to satisfy themselves of this; but the fact is so nevertheless, as we will now endeavour to demonstrate.

He then gives a summary of the details required to be known regarding each asso., and says thereon :—

It will be obvious that whatever elements are used in estimating the value of the properties of the one co. the same must be strictly adhered to in determining that of the other. Thus the rates of mort. and int. must be the same, and the formulæ made use of in the various investigations on the one side must, for similar purposes, be always applied on the other. It will be found most convenient to take credit in the gross for all prem. payable in respect of the several existing contracts, so that the amounts put down as representing the liability under them will be sufficient merely to provide for the risks; for it is to be borne in mind that the object is to determine what remains after every liability legally incurred is provided for. For expenses, and for add. by way of bonus, etc., we must look to the "surplus;" and thus this particular item becomes, in conjunction with others, the indicator of the relative condition of the two cos.

Again :

The equality supposed to exist as above will of course rarely be found to exist, and hence there will be an excess to be thrown off. This excess will have to be dealt with by the co. to which it belongs prior to the amalg., and should be apportioned amongst its members in the manner prescribed by its own regulations; and an equality being thus estab., the two sos. are in a condition to be blended without any unfairness to either.

He shows the conditions essential to the fulfilment of these requirements, and concludes the paper as follows :—

That these operations, when properly carried out, are productive of much good, nobody, we think, will deny; while they serve, on the one hand, to give strength and vigour to the surviving inst., they arrest the downward course of the more feeble ones, and in some instances, it may be, avert no small amount of distress and embarrassment from those concerned with them.

This paper was printed in *Assu. Mag.* vol. vii., and in the same vol. will be found a letter from Mr. Sprague commenting thereon—approving of the plan suggested by Mr. Jellicoe for remedying differences in rates of prem., and equalizing bonuses—and showing that the rules laid down for accomplishing these ends have even a wider application than Mr. Jellicoe had claimed for them.

In the case of the *Saxon Assu.* ex parte *Anchor Assu.*, heard before V.C. Wood in 1862, a claim against the *Saxon Co.* was admitted, notwithstanding that an attempt had been made to trans. its liabilities to another Co. (the *Era*), and that the *Anchor* had accepted an exchange of an *Era* security for their *Saxon* one. [See Carr's case in *Waterloo Ins. Co.* 1864.] And in the same year, in the case of the *Saxon Assu.* ex parte the *Era Assu.*, a petition on the part of the purchasing Co. to be repaid by the selling Co., the excess of the liabilities they had incurred over the assets which had been trans., was dismissed by V. C. Wood.

In the case of *Bishop v. Scott*, arising out of the amalg. of the *United Kingdom Life* with the *North British*, which was heard before V.C. Wood, in 1863, the facts were as follows: A bill was filed by a parti. policy-holder in the *United Kingdom* to restrain that Co. from carrying out an arrangement for a transfer of the funds, assets, etc., of that Co. to the *North British* by way of amalg. The Bill also prayed for an account of the assets and liabilities of the first-named Co., and for the appointment of a receiver. On a motion for injunction, it was held that the Court, considering that the policy-holder would not be damnified by the proceedings for the amalg. remaining *in statu quo* until the hearing of the cause, would decline to grant an injunction as prayed, the principal part of the arrangements having been carried out.

The point was raised in this case whether a policy-holder in a Life Ins. Co. with parti. in profits was not a partner. It was not pursued.

In Carr's case, arising out of the affairs of the *Waterloo*, which came before the Master of the Rolls in 1864, the facts were as follows :—

The Deed of Asso. of the Co. which bound the policy-holders, contained a power to dissolve; and thereupon the Directors were to get from another Co. an undertaking to pay all future liabilities, and to trans. to such guaranteeing Co. so much of the funds as should be agreed on between the contracting parties, and as would be sufficient to enable the Co. to comply with their undertaking. The Court held that the amount to be paid over was a matter of agreement between the two cos. with which policy-holders had no concern, and that a policy-holder who refused to be trans. had no claim upon the *Waterloo*. "I am of opinion (said the Judge) that the policy-holders are bound, and that if they do not choose to accept the undertaking of the *British Nation* (to which offices the bus. had been trans.), they cannot prove against the *Waterloo Co.*"

In the case of *Aldebert v. Leaf*, arising out of a proposed trans. of the bus. of the *Argus Life* to the *Eagle*, it was held by V. C. Wood, that when by the provisions of the D. of Sett. of an Ins. Co., the directors are bound upon a dissolution to set aside sufficient funds out of the assets of the Co. to meet existing engagements, an agreement for the

trans. of a bus. without making such a provision is *ultra vires*. It was further held that a policy-holder, though he has no such charge upon the funds of the Co. as will give him priority over other creditors, or entitle him to interfere with the directors in the ordinary management of the bus., has a right to file his bill in such a case; but the Court will only extend its relief to the circumstances that have arisen, and not to those that may thereafter arise.

In *Ex parte Webster*, arising out of *British Provident L. and F.*, heard before V. C. Kindersley in 1864, the following circumstances arose. By deed dated 1st June, 1858, the *Anglo-Australian L.* was to be amalg. with the *Brit. Provident*, the terms being that the bus., property and effects of the *Anglo-Australian* should be trans. to the *Brit. Provident*, and that the shareholders of the former should become shareholders in the latter, and should execute its D. of Sett.; and that thereupon the said shareholders should, out of the funds and property of the *Brit. Provident*, be indemnified against all claims in respect of the *Anglo-Australian Co.*, and that such shareholders as should fail to execute the D. of Sett. should be precluded from the benefit of such amalg. The *Brit. Provident* being afterwards wound up, the official manager sought to place one of the shareholders of the *Anglo-Australian*, who had not executed the Deed of the *Brit. Provident*, upon the list of contributories. The application was dismissed with costs.

In March, 1864, the present Premier, whilst introducing his Post Office Life Insurance Bill, remarked:

That amalgamation is an illustration of what you will probably say is no better than wholesale robbery. (Loud cries of "Hear, hear.") Nay more, I will go a step further, and say that a great many of these proceedings are worse than wholesale robbery, and there are many persons who have never seen the inside of a gaol, and yet who had fitter be there than many a rogue who has been convicted ten times over at the Old Bailey. ("Hear, hear.") The inside of a gaol would be the proper *locale* for some of the persons connected with insurance amalgamations.

If Mr. Gladstone really believed this, why did he not move for a committee of inquiry, armed with full parliamentary powers? He might have prevented some of the mischief which has since arisen.

Mr. Lindley, in his great work on *Partnerships and Cos.* (2nd ed. 1867), offers the following observations on this subject:

A co. incorp. by Charter or special Act of Parl. cannot delegate its powers, and therefore cannot transfer its bus. even for a time to another co., nor can the majority of shareholders of any co. bind the minority by an agreement to transfer its property and business, *unless such power is conferred by the original constitution of the co.* Nor is it competent for the majority of one co. to purchase the assets and liabilities of another *without similar powers*. Whence it follows that two cos. cannot amalg. with each other unless such a transaction is authorized by the constitutions of both cos., or unless all the shareholders in both consent to the amalg. And where there is power to amalg., that power must be strictly pursued, or at least there must be no substantial departure from it.

In the case of the *International and Hercules*, ex parte Blood, heard before V. C. Malins in January, 1870, the V. C. stated his opinion that an Act of Parl. ought to be passed prohibiting these trans. of bus. and assets from one ins. co. to another. They placed the policy-holders in a position of great embarrassment as to what course they ought to adopt — whether they were bound to go over to the new co. or had any option in the matter. The numerous transfers which had been effected had worked infinite injury during the last 25 years.

In the case of *Southall v. British Mutual*, a suit by a policy-holder of that co. to set aside an amalg. between it and the *Prudential*, on the ground of being *ultra vires*, heard before the Master of the Rolls in December, 1870, it was held to be quite legal for any co. to be placed under the winding-up sections of the Cos. Act, 1862, for the sole purpose of carrying out an amalg. contract.

This decision, which is a very important one, was confirmed by the Lords Justices, on appeal (1871). We hear that it is now to be carried to the House of Lords.

In view of the decided cases, and as a matter of prudence, every new ins. asso. should embody in its constitution, when founded, the most ample powers for amalg. with, trans. itself to, or taking over the bus. of any other ins. asso. This may be readily accomplished by inserting such a clause as the following in the "objects" set forth in mem. of asso.:

To promote, establish, and aid other cos. or asso. for effecting any objects similar or analagous to the objects of the co., or which may be auxiliary, subsidiary, or otherwise conducive to or connected with such objects, and to acquire and hold shares and interests in such cos. and asso. or the property or bus. thereof. To amalg. or unite with and absorb into the co. any other cos. or asso. already or hereafter to be formed for effecting any of the objects of the co., or any similar or analagous objects; and to acquire and hold shares and interests in, and to acquire the bus. and property of such cos. and asso.

Then, in the body of the articles, there should be inserted, under "powers of directors," the following:

To carry into effect any arrangements which may be recommended by the directors [and approved of by a General Meeting], for the amalg. or union of the co. with any other co. or asso. already or to be hereafter formed for objects similar or included in the objects of the co., as specified in the Memo. of Asso., or for the dissolution or extinction of the co., or the winding-up of its affairs, or for the transfer of its business, property, and liabilities to any other co.

The words in brackets may be inserted or not, as a rule it is better they should be.

On the general policy of amalg. we do not propose to enter further. Their advisability

must be regulated by circumstances. When the position of an asso. becomes hopeless, there are now three courses before it. 1. Wind up. 2. Apply to the Court to reduce the contracts, under 22nd sec. of Life Assu. Cos. Act, 1870. 3: Amalgamate. We will only add: an amalg. is a marriage—without limitation as to polygamy—subject to all the considerations of prudence, fitness, and financial resources, which such an event implies. The Court of Chancery, in the case of ill-assorted unions, performs the functions of the Divorce Court.

In the tables which we shall hereafter pub., we propose to include one showing all the amalg. and transfers of ins. asso. which have taken place. They number many hundreds.

In the Life Assu. Cos. Act, 1870, there were the following special clauses relating to amalg. of life asso., which may have the effect of removing some of the legal impediments which have heretofore existed:

14. Where it is intended to amalg. two or more cos., or to transfer the life assu. bus. of one co. to another, the directors of any one or more of such cos. may apply to the Court, by petition, to sanction the proposed arrangement, notice of such application being pub. in the *Gazette*, and the Court, after hearing the directors and other persons whom it considers entitled to be heard upon the petition, may confirm the same if it is satisfied that no sufficient objection to the arrangement has been estab.

Before any such application is made to the Court, a statement of the nature of the amalg. or trans., as the case may be, together with an abstract containing the material facts embodied in the agreement or deed under which such amalg. or trans. is proposed to be effected, and copies of the actuarial or other reports upon which such agreement or deed is founded, shall be forwarded to each policy-holder of both companies in case of amalg., or to each policy-holder of the transferred co. in case of transfer, by the same being transmitted in manner provided by section 136 of the Cos. Clauses Consolidation Act, 1845, for the transmission to shareholders of notices not requiring to be served personally; and the agreement or deed under which such amalg. or trans. is effected shall be open for the inspection of the policy-holders and shareholders at the office or offices of the co. or cos. for a period of fifteen days after the issuing of the abstract herein provided.

The Court shall not sanction any amalg. or trans. in any case in which it appears to the Court that policy-holders representing one-tenth or more of the total amount assu. in any co. which it is proposed to amalg., or in any co. the bus. of which it is proposed to trans., dissent from such amalg. or trans.

No co. shall amalg. with another, or trans. its bus. to another, unless such amalg. or trans. is confirmed by the Court in accordance with this section.

Provided always, that this section shall not apply in any case in which the business of any co. which is sought to be amalg. or trans. does not comprise the bus. of life assurance.

15. When an amalg. takes place between any cos., or when the bus. of one co. is trans. to another co., the combined co. or the purchasing co., as the case may be, shall, within ten days from the date of the completion of the amalg. or trans., deposit with the Board of Trade certified copies of statements of the assets and liabilities of the cos. concerned in such amalg. or trans., together with a statement of the nature and terms of the amalg. or trans., and a certified copy of the agreement or deed under which such amalg. or trans. is effected; and the statement and agreement or deed of amalg. or trans. shall be accompanied by a declaration under the hand of the chairman of each co., and the principal managing officer of each co., that to the best of their belief every payment made or to be made to any person whatsoever on account of the said amalg. or trans. is therein fully set forth, and that no other payments beyond those set forth have been made or are to be made either in money, policies, bonds, valuable securities, or other property by or with the knowledge of any parties to the said amalg. or trans.

Recent circumstances have tended to throw great distrust upon amalg. It cannot be doubted that both in the *Albert* and the *European* many of the amalg. were most ill advised, to use no more harsh term. But the real essential good of well-regulated amalg. is in no way disproved by these events. The abuse of the thing cannot enter into the argument. Thousands of families would at the present moment have been worse than uninsured, but for the judicious amalg. of the offices in which they orig. ins. with more prudently conducted and more powerful offices.

Two great lessons have come out of these recent events: one to shareholders of amalg. cos., who have on the whole fared much worse than policy-holders; this we shall discuss under DISSOLUTION of Ins. Asso. The other to policy-holders, which we shall discuss under the head of NOVATION. In the mean time the reader may turn back to ALBERT ARBITRATION; and RECONSTRUCTION will be considered under its proper head. [CONSTITUTION, LEGAL]. [OBJECTS.] [POWERS OF DIRECTORS.]

AMAZON LIFE ASSU. AND LOAN CO. AND SICK BENEFIT SO. "for Life and Sick Assu. Annuities, Endow. etc." This asso. was founded in 1853. It had a very imposing set of officials: The Rt. Hon. Lord Erskine was Chairman; Mr. Robert George Weir, Man. and Act.; Bethel Henry Strousberg being Consulting Act. Among the features were: "Life assu. from £5 to £5,000." "Life pol. once granted never disputed." Sums from 2s. to 5s. per week in sickness to persons of both sexes from 9 to 15 years of age; from 5s. to 20s. from 15 to 55 years. "Medical advice, attendance, and medicines free." "Members free immediately." "Apprentice fees for children," etc., etc. The asso. passed into liq. in the following year. Order made 10th Nov. 1854. Mr. R. P. Harding, liq.

An important case arose out of the formation of the So. It is known as Blackburn's case. The leading points were as follows:

A prosp. was issued by the promoters of a co. described in the prosp. as the *Amazon Life Assu. and Loan Co. and Sick Benefit So.* An applicant for shares in it received in answer a letter headed, *Amazon Life Assu. and Loan Co.*, and stating that in compliance with his application shares had been allotted him. He paid the deposits, and he received a certificate of shares in the *Amazon Life Assu. and Loan Co.* Afterwards, and before he did anything else, he discovered that so much of the orig. scheme as related to a Sick Benefit So. had been abandoned, and he repudiated the contract. It was held that he was entitled to do so, no binding contract ever having been entered into by him. In answer to the argument that the letter of allotment being headed only *Amazon Life and Loan Co.* gave him notice of the change in the nature of the Co., and that when he afterwards paid the deposit he accepted shares

in the new co., it was held, that notwithstanding the omission from the letter of the words "Sick Benefit So.," he might well believe that the Co., the shares of which had been allotted, was the same as that for whose shares he had applied. He had a right to take it, and might well take it for granted that what he had applied for he had obtained, and it was incumbent on those who offered him what he had not asked for to draw his attention to that circumstance.

This decision was reversed on appeal ; add. evidence being adduced ; and the Court was satisfied that when Blackburn paid his deposit he must have known what shares he was taking.

AMBIGUITY, doubtfulness, double-meaning, obscurity. It seems to be a rule with the Courts where any obscurity arises in the terms or conditions of a policy of ins. to interpret against the office—on the ground prob. that as it provides the forms for its contracts, they should be rendered so clear as not to admit of more than one meaning. Some general rules have been estab. for special cases of this sort, which it will be useful to give here :

It is a well-approved rule that where parties have used language which admits of two constructions, the one contrary to the apparent general intent, and the other consistent with it, the law assumes the later to be the true construction.—*Chitty on Contracts*.

So where the different parts of an instrument are inconsistent with each other, effect must be given to that part which is calculated to carry into effect the real intention ; and that which would defeat it must be rejected. And where there are two clauses in a contract so totally repugnant to each other that they cannot stand together, the former shall be received, and the latter rejected.—*Shep. Touchstone; Blackstone*.

Ambiguity of language is, however, to be distinguished from unintelligibility and inaccuracy, for words cannot be said to be ambiguous, unless their signification seem doubtful and uncertain to persons of competent knowledge and skill to understand them.—*Story on Contracts ; Phillips on Evidence*.

With regard to certain contracts, Parol Evidence is admitted under certain conditions to explain apparent inconsistencies. Policies of Ins. are of this class. [PAROL EVIDENCE.]

AMENDMENT OF THE LAWS RELATING TO INS. ASSO.—Of late years there have been numerous amendments in the laws relating to or affecting Ins. Asso. These will be all noted under their proper heads. It would be a great blessing if the numerous laws now relating to Ins. Asso. could be embodied in one general measure ; but we see very little chance of this.

AMENTIA ; defect of intellect, partial in imbeciles, complete in idiots.

AMERICA, BRITISH INS. OFFICES TRADING IN.—The first Agency for a Brit. Ins. Office in the U.S. was estab. by the *Phoenix* Fire in N.Y. in 1805. Agencies were opened by this Co. in other American cities about this date. That for Philadelphia was closed in 1810 ; that for N.Y. in 1815. The agency in Charleston, and one or two others in the Southern States, continued until the commencement of the late war, when they died out. The *Phoenix* has still remained indirectly interested in F. bus in the U.S. by way of re-ins. contract, and may prob. contribute some £50,000 to the recent losses in Chicago.

In 1851 the *Albion* founded a Life branch in the U.S., and transacted a considerable bus. The branch was continued until the amalg. of the bus. of that Co. with the *Eagle* in 1857. See *EAGLE*.

In 1852 the *International Life* (then *National Loan Fund*) commenced bus. in the U.S., and acquired a considerable number of pol. In 1859 the Ins. Commissioners in the State of Massachusetts made an investigation into the affairs of the Co., and declared it to be insolvent to the extent of some £200,000. Its certificates were accordingly stopped in that State and N.Y. This was the first act under the American Ins. Laws which indicated to us on this side that the said Commissioners were "live men." The deposit made in the U.S. has protected these pol. to a large extent. In 1868 the pol. were trans. to *Hercules* of Lond. ; in 1869 to the *Prudential* ; and they have since been re-ins. with the *Empire Mut.*, under arrangements conducted with great skill, and, we believe, satisfactorily to all parties.

In 1853 the *British Commercial* commenced bus. in the U.S., and continued it down to 1860, when its bus. in England was amalg. with the *British Nation*, and the affairs of the Co. became closed in America.

In the same year (1853) the *Liverpool and Lond.* founded a branch in the U.S. and speedily took a very influential position. For several years its managers were in some conflict with regard to the actual requirements of the U.S. Ins. Law ; but these have been amicably adjusted. We believe no Life bus. was trans. in the U.S. until 1859. On the 31st Dec. 1869, the financial position of the U.S. branch was as follows : Funds invested and in hand (5 dols. to £), £507,370 ; amount required to re-ins. Life pol. on American Experience, 4½ p.c., £30,119 ; amount required to re-ins. ann. Fire risks at 40 p.c. of gross prems., £185,304 ; ditto perpetual F. pol. 95 p.c., £47,991 ; outstanding claims, etc., £26,722, making total liabilities £290,137 ; and leaving a surplus of £217,233. The total number of Life pol. in force was 247, ins. £223,377 ; Fire pol. in force, net, £23,837,473. The Life income was £6,545. The Fire income was £425,152.

By the terrible fire at Chicago, which has occurred while these pages are passing through the press, this Co. is said to have incurred very considerable losses ; estimates range from £700,000 down to £400,000, prob. both exaggerations of the actual facts. Whatever the losses may be, they will be punctually discharged ; and the credit of the Co. will remain untarnished.

In 1854 the *Colonial Life* commenced bus. in the U.S., and continued the same down to 1860. In 1861 the affairs of the agency were closed.

In 1855 the *Royal* founded several agencies in the U.S., which were not worked as a

branch there, but each agency corresponded direct with the head office in England. The Co. took a very commanding position at an early date. It does not, like most of the other British cos., make up a special ann. statement showing the result of its American bus., but files its general bal. sheet in each State where it transacts bus. The F. bus. transacted by the Co. in the State of N. Y. for the year ending 31st December, 1869, was as follows: Amount of F. risks written during the year £3,972,118. Net prem. received £16,554; losses £10,354; taxes £682. The *Royal* is believed to lose about £20,000 by the Chicago conflagration.

About 1855 the *Monarch* (No. 1) F. and L. founded a branch in N. Y.; and the same was continued down to 1857, when the entire bus. of the Co. was trans. to *Liverpool and London*.

In 1857 the *Unity* Fire commenced bus. in the U. S., and continued the same down to 1862, when its entire bus. merged into *Liverpool and Lond.* The U. S. branch was carried on with considerable success.

In 1857, the *Eagle* took over the bus. of *Albion*, and commenced itself to carry on bus. in the U. S. It has since ceased to issue any new pol. On 31st December, 1869, the total assets of the Co. in the U. S. stood at £64,855. The pol. in force were 797, ins. £422,000. In that year 25 of its pol. had terminated, 8 by death, 12 by surrender, 3 by lapsing, and 2 by change.

In 1858 the *Northern* commenced bus. in the U. S. with a great deal of enterprise. It withdrew from direct bus. in 1862, very much, we believe, in consequence of the war. It still has an interest in U. S. bus. under re-insurance contracts, and suffers to the extent of some £20,000 by the recent fire at Chicago.

In 1866 the *Queen* commenced F. bus. in the U. S., and continues the same at the present time. The position of the branch on 31st December, 1869, was the following: Aggregate available assets £59,933; amount required to ins. outstanding risks £28,166; outstanding losses and expenses £6,368; together £34,515; leaving a surplus of £25,418. Amount of F. risks underwritten during the year £2,330,153; prems. received £22,314; losses paid £9,645. The Co. is believed to have sustained no loss in Chicago.

In the same year (1866) the *North British and Mercantile* also founded a F. branch in the U. S., and almost at once took a commanding position. The financial position of the branch on 31st December, 1869, was as follows:—Aggregate available assets £154,777; aggregate liabilities, including re-ins. of all outstanding risks, £75,917; leaving a surplus of £78,860. The income of the year was £163,473; the expenditure £95,507; the amount of risks in force £10,608,458.

This Co. is believed to lose about £400,000 by the fire at Chicago. With a promptness characteristic of the management, the agents were instructed to settle all claims, and draw for the amounts at sight. The "noble telegram" was duly appreciated on the other side.

In 1867 the *Imperial* F. opened a branch in the U. S., and at once commanded a considerable bus. The position of the branch on 31st December, 1869, was as follows:—Aggregate amount of actual available assets £129,595; aggregate liabilities, including re-ins. of all outstanding risks £71,957; surplus £57,618; income of the year £117,661; expenditure £134,889. Amount of pol. in force £8,339,145, yielding in prems. £103,054.

The losses of this Co. at the Chicago fire are reported to be considerable; as much as £100,000 being named. Whatever the amount, it is certain the Co. has the means of paying promptly.

In 1870 the *Commercial Union* opened a F. branch in the U. S., making of course the necessary deposits. It is believed the Co's. loss in connexion with the Chicago fire will not exceed £15,000.

We have mentioned that the *Phoenix* and *Northern* are sufferers at Chicago through re-ins. contracts. We believe the *London Assu.*, *Lancashire*, and *Britannia* also suffer in the same way; also various French and German offices.

AMERICA, HIST. OF INS. IN.—We propose for several reasons not to enter upon the inquiry suggested by the preceding title at this stage of the present work. Our chief reason is that the learned editor of the *Ins. Monitor* of N. Y.—Mr. C. C. Hine—has been for several years engaged in the preparation of a work which is to be *A Hist. of Ins. in the U. S.* We have only recently become aware of this fact—after the materials for our chap. had been in a great measure prepared: but we have no desire, and no intention, to trespass upon his territory. We have enough to do on our own side. We must, of necessity, make frequent reference to American actuaries, American authors, and American principles and practice. We must also present our art. on AMERICAN MORT. TABLES, for the purpose of comparison with those of Gt. Brit. and the continent of Europe, as they appear in these pages. Then under the head of UNITED STATES, we can add so much upon the general hist. of Ins. there as may appear necessary for the completeness of our work. We think and hope even the "*Stern Monitor*" will be content with this "adjustment."

AMERICA, INS. LAWS OF.—There are in the U. S. 39 States and territories having regulations affecting the conduct of home, and admission of the Cos. of other States, and foreign Cos.: and the conditions of admission, etc. We cannot deal with these in any brief and intelligent manner under one general head: we therefore propose to give a very

brief outline of the leading requirements of the laws in each State and territory under its name, in alphabetical order. See ALABAMA. Our difficulty will be to keep accurately posted as we go along. We must do our best. Some of the early laws in the State of N.Y. possess points of very considerable interest. If the NATIONAL INS. CONVENTION now in session should succeed in one of its primary objects, namely, uniform action and requirements from the several States in the matter of Ins., a great good will be accomplished.

AMERICAN "EXPERIENCE TABLE." See AMERICAN TABLES OF MORT.

AMERICAN LIFE ASSU. MAG. AND JOURNAL OF ACTUARIES, founded in N.Y. in 1859, and edited by Mr. G. E. Currie. We have the work down to 1867, during which period there were very few high-class papers embodied in it : by which we mean papers from the pens of the able actuaries of which the U.S. can now boast. We have not seen the later vols.

AMERICAN TABLES OF MORT.—We propose here to give some account of the several TABLES OF MORT. which have been constructed in America upon American data. There have been in the U.S., as here and elsewhere, various mort. obs. which have not resulted in Tables of Mort. These we shall give a chronological account of under UNITED STATES.

WIGGLESWORTH'S TABLE (1789).—In the year 1782 Prof. Edward Wigglesworth, of the Harvard University, entered upon an investigation of the early Bills of Mort. kept in various parishes in the Commonwealth of Massachusetts, some of which he states had been kept for a long course of years. These observations resulted in 1789 in the formation of "A Table showing the prob. of the duration, the decrement, and the expectation of life in the States of Massachusetts and New Hampshire, formed from 62 Bills of Mort. on the files of the American Academy of Arts and Sciences, in the year 1789." Under our art. on BILLS OF MORT. we shall give some account of these. For our present purposes it will be sufficient to state that the whole number of deaths on the bills was 4893, which happened at the following periods of life :

Age.	Number.	Age.	Number.
under 5 years	1942	55-65	270
5-10	236	65-75	372
10-15	136	75-80	185
15-25	425	80-85	171
25-35	382	85-90	103
35-45	349	90-95	36
45-55	270	95-100	16

Upon this data he prepared his Table, showing the persons living and the decrements at each age of life, and the expectation of life at quinquennial periods only. We propose for brevity sake to reduce the whole table to the quinquennial periods :

Ages.	Persons living.	Decrements of life.	Expectation of life.	Ages.	Persons living.	Decrements of life.	Expectation of life.
Birth	... 4893	... 1264	... 28'15	55	... 1153	... 27	... 18'35
5	... 2951	... 58	... 40'87	60	... 1018	... 27	... 15'43
10	... 2715	... 28	... 39'23	65	... 883	... 37	... 12'43
15	... 2579	... 42	... 36'16	70	... 698	... 37	... 10'06
20	... 2365	... 43	... 34'21	75	... 511	... 37	... 7'83
25	... 2154	... 40	... 32'32	80	... 326	... 35	... 5'85
30	... 1962	... 38	... 30'24	85	... 155	... 21	... 4'57
35	... 1772	... 35	... 28'22	90	... 52	... 8	... 3'73
40	... 1597	... 35	... 26'04	95	... 16	... 6	... 1'62
45	... 1423	... 27	... 23'92	99	... 1	... 1	...
50	... 1288	... 27	... 21'16				

Now this Table in this particular state would have been liable to all the objections which are justly urged against the NORTHAMPTON TABLE. The learned Professor was fully aware of this—and he gives the required adjustments, as well as the reasons for them, in the following para. :

From these elements [those of the first table], the Table is formed by taking the number of deaths as the radix of calculation. This would have given the proportional number of persons living and dying at every age, from the birth to the latest extremity of life, had the ann. number of deaths been equal to the births. But by the bills it appears that the births are ann. double the deaths. Therefore the number of persons of each age as given by the Table, is less than is actually in life together, from an ann. excess of 4893 births. Consequently the expectation of life is less than just, especially at the early periods of life.

The whole number of inhabitants, according to this table, is 140,182, of which 48,183 are persons under 16 years of age, and 91,000 above 16 years of age. By the enumeration of the inhabitants of Massachusetts, the whole number of free males under 16 was 95,453, and 87,189 above 16. Therefore 35,851 persons under 16 must be added to those in the table under 16, to make the table accord with the enumeration, which will give 176,633 inhabitants, produced by an excess of 4893 ann. births. This add. will raise the expectation of a child just born from 28'15 years to 35'47 years; of a child 5 years of age from 40'87 years to 48'46 years; of a person of 10 years, from 39'23 years to 43'23 years; of a person of 15 years from 36'16 to 36'50 years. The ann. excess of 4893 births above the deaths, on a stock of 176,633 inhabitants, determines the period of duplication to be 25'30 years, etc.

This table was afterwards adopted by the Supreme Court of Massachusetts as a rule in estimating the value of Life Estates—but whether with or without the corrections which

its learned author indicated that it required does not appear. It seemed not to have been present in his mind that the table should be used for the purposes of Life Ins. [LIFE CONTINGENCIES.]

Mr. C. C. Hine, from whose "specimen sheets" we have drawn some of the above details, says :

Though the Northampton Table is notoriously faulty, the time which its experience covers, and the conditions under which it was formed, naturally suggest it for comparison with that of Massachusetts. A comparison of the two shows that at all ages under 15, the death rate of the two tables is nearly the same; from which we may infer that if the pop. of Northampton was stationary, the mort. among the Massachusetts children of that day was much less than in the English town. Above 15 the death rate of Massachusetts was greatly ahead, until middle life was reached; the result, no doubt, of the harsh New England climate on constitutions which had not sufficient strength to withstand the pulmonary and other disorders incident to a new and sparsely settled country. Above this point the selected lives which remain with constitutions estab. and inured, enjoy a degree of longevity unsurpassed on the whole by any country in Europe. But the most remarkable correspondence is that exhibited between this table of Professor Wigglesworth, and the late results of the census returns, as deduced by Mr. Meech. [See 1860.]

PENNSYLVANIA TABLE (1814).—The *Pennsylvania Co. for Assu. upon Lives* was founded in 1812, and very soon after its estab. computed, for its own use, Tables of the Expectation of Life, drawn from two sources, viz., (1) the reports of the Philadelphia Board of Health; (2) records of the Episcopal Church. We have not at hand any details of the exact data furnished from these sources, but we have the results, which are sufficient for our present purposes :

Age.	Board of Health Expectation.	Episc. Church Expectation.	Age.	Board of Health Expectation.	Episc. Church Expectation.
1 year	..... 25'96	..... 30'91	40 years	..... 19'15	..... 21'44
5 years	..... 36'94	..... 37'91	50 "	..... 16'32	..... 17'32
10 "	..... 34'59	..... 37'12	60 "	..... 13'71	..... 13'75
15 "	..... 30'92	..... 34'10	70 "	..... 9'83	..... 9'37
20 "	..... 27'04	..... 30'60	80 "	..... 6'97	..... 5'95
30 "	..... 21'48	..... 25'50	90 "	..... 4'73	.....

This Table, contrasted with some of the others, indicates the higher death-rate of American cities, as against the rural districts.

GILL'S TABLE (1842).—When the *Mutual* of N.Y. was in course of formation in 1842, Prof. Gill was called upon to supply a suitable table of mort. on which to base its operations as a mut. office. The way he accomplished his task was this: He took the *EQUITABLE EXPERIENCE*, the *SWEDISH*, and such other good Tables as he was familiar with, and obtained an average of their results. From that table he deduced the prems. The table was, we believe, afterwards submitted to various English actuaries, and approved. We need not pursue this table—great as have been the results flowing from its use, combined with proper management. It is our purpose only to deal with tables founded on orig. obs.

KENNEDY'S TABLES (1850).—In 1852 Mr. Joseph C. G. Kennedy, who had been superintendent of the U.S. census of 1850, pub. his report on the census, including therein two tables of mort. based upon the returns of that census, for the States of Massachusetts and Maryland. Regarding these it must be noted that the records of mort. only extended over the census year; and though it is considered to have been an average year for deaths, yet the assumption that the pop. affected by so many causes of irregular movement is to be taken as stationary is one that greatly depreciates the value of any tables deduced therefrom. The mort. of Maryland, comprising a pop. of 583,034, and showing a death-rate of 1'685 p.c., was considered by Mr. Kennedy to be a fair estimate of the standard of human life in the older settled States. Mr. S. Brown called attention to the fact (*Assu. Mag.* vol. viii. p. 187), that as to male life this table differed but little from the English Table (No. 1), while for female life it gave an expectation of from 1½ to 2 years above the English Table. The other table, from the returns for Massachusetts, was also for males and females separately.

The following abstract of the above Tables, compared with the English Table (No. 1), based on the census of 1841, will be sufficient for all purposes here. The figures show the "expectation of life" at the several ages named :

Age.	MASSACHUSETTS TABLE.		MARYLAND TABLE.		ENGLISH TABLE, No. 1.	
	Males.	Females.	Males.	Females.	Males.	Females.
0	38'3	40'5	41'8	44'9	40'2	42'2
20	40'1	40'2	39'7	42'1	39'9	40'8
40	27'9	29'8	25'8	29'5	26'6	27'7
60	15'6	17'0	14'4	16'0	13'6	14'4
80	5'9	6'4	6'2	7'0	4'9	5'2

There appears to have been a table of mort. deduced from the New York State Census taken in 1855; but we have never seen it, and the references we have met with are too slight to enable us to give any note of results.

The English Reg -Gen. said in his 5th Rep. (1843) :

The census has been taken with great regularity in the U.S.—it was part of the constitution of the States that it should be so taken for political purposes—and the ages are properly distinguished ; but abstracts of the registers of deaths have only been pub. in Philadelphia, New York, Boston, and perhaps a few other of the older cities. No National Life Table can therefore be formed until, in addition to the census, a careful system of registration of deaths is introduced.

ELLIOT'S TABLE (1857).—About 1857 a table of mort. was constructed by Mr. E. B. Elliot, based upon the census returns of 1850 for the State of Massachusetts. This table was pub. in the *Proc. of the Amer. Asso. for the Adv. of Science*, held at Montreal, in 1857. It was understood to form part of an orig. series which had been prepared for the *New England Mut. Ins. Co.* of Boston, U.S., from extensive and trustworthy European and American data. The following abstract of this table, comparing its results with those of the Carlisle Table, will be sufficient for our present purposes :

Age.	NUMBER LIVING.		EXPECTATION OF LIFE.	
	Massachusetts.	Carlisle.	Massachusetts.	Carlisle.
0	10,000	10,000	39·8	38·7
5	7,146	6,797	50·2	51·3
10	6,873	6,460	47·1	48·8
15	6,726	6,300	43·0	45·0
20	6,437	6,090	39·9	41·5
30	5,748	5,642	34·0	34·3
40	5,078	5,075	27·9	27·6
50	4,409	4,397	21·3	21·1
60	3,597	3,643	15·0	14·3
70	2,475	2,401	9·4	9·2
80	1,059	953	5·0	5·5
90	118	142	2·9	3·3
100	2	9	...	...

Mr. Brown, reviewing this Table, said :

It appears that from about age 5 to age 15, lower rates of mort. prevailed in Massachusetts than is generally the case in European communities ; that from age 15 to various ages between 35 and 50, the Massachusetts rates are much higher than, after which they again fall somewhat below, the European rates. Under the age of 5 years, the mort. in Massachusetts seems more intense than in Europe generally ; from 3 to 15 it approaches closely to that of Sweden ; from 17 to 45 nearer to Belgium, though higher ; and after 45, nearer to, but lower than, the average English rates. As a whole the mort. of Massachusetts is better represented by that of England than of any other European state.

MUTUAL BENEFIT TABLE (1858).—In 1858 the directors of the *Mut. Benefit Life Ins. Co.* of New Jersey, pub. the mort. experience of the office for the 12 years it had then been in existence. Its members had averaged 4,000, until the later years, when they had been about 5,000. In the observations, lives were carefully distinguished from policies ; and pains were also taken to ascertain with accuracy—(1) the number of persons who, at each age of life, took or renewed a pol. by payment of prem. ; (2) how many died within the year the policy had to run. Each age therefore included new or recent selections, as well as those of earlier date, added together in each successive year of the Co's. existence. The experience had been very favourable, much of which was due to the effect of recent selection. The following is an abstract of a mort. table deduced from the experience named, prepared, we believe, by Mr. Sheppard Homans. The number of actual deaths are contrasted with the number of "probable deaths" as shown by the *Carlisle* and the *Experience* Tables.

Age.	Persons Living.	Died.	PROBABLE DEATHS.	
			Carlisle.	Experience, 17 offices.
15	22	...	·1	·2
20	112	2	·8	·8
25	672	4	4·9	5·2
30	1480	10	15·0	12·5
35	2110	23	21·6	19·6
40	2102	12	27·3	21·8
45	1571	14	23·3	19·2
50	961	16	12·9	15·3
55	547	3	9·8	11·9
60	239	7	8·0	7·3
65	101	4	4·2	4·5
70	32	2	1·7	2·1
75	3	...	·3	·3
79	1	...	·1	·1

HOMANS' TABLE (NO. 1) —In 1859 there was pub. by the *Mutual* Ins. Co. of N.Y. an elaborate report on the affairs of that Co., which had been prepared by Mr. Sheppard Homans, its actuary. The general features of that report it is not our present purpose here to deal with. They will be discussed, with the details of some previous reports on the affairs of the same Co., by its previous actuary, Professor Gill, under UNITED STATES; where we propose to give a pretty complete outline, not only of the growth and development of ins. in all its branches, but also of MORT. OBS. made in that great country, and of many incidental matters. Forming part of the report under notice was a TABLE of MORT. constructed by Mr. Homans, upon the mort. experience of the *Mutual*. It is of this table and the facts immediately connected with it that we have now to speak.

The table is based upon the experience of the office during a period of 15 years ending 1858, that is, through the entire duration of the office. The number of lives existing at the date of observation was 10,387, of which 9,485 were "whole life," 572 "seven years" pols.; 174 for other short terms, and 156 were "endow." pols. It will not fail to be noted that the number of lives here under observation was greater than the entire pop. of either Northampton or Carlisle, at the respective dates of the observations which have been named after them. The following explanation given by Mr. Homans must not be overlooked:

With the exception of this single assumption, that the *office age* is the *real age*, the results which are now presented are deduced from the most rigorous calculation. The number of lives exposed to mort. are carefully separated from the number of policies, and no care or labour has been spared in making the various observations and deductions as complete and accurate as possible.

The amount insured under the above policies was (taking 5 dols. to the £) £6,094,739, while the bonus add. thereon amounted to £656,446, making a total of £6,751,185. We now reach the table, which Mr. Homans calls "an adjusted rate of mort. according to the general experience of the *Mut.* Life Ins. Co. of N.Y. for the 15 years ending Feb. 1, 1858." We propose here only to give an abstract of the table, because we shall have to give it in detail hereafter, when it shall have passed through all the "adjustments," "graduation," and other crucial tests, which it is the fate of such tables to encounter. The orig. is placed for purposes of comparison alongside the table on which the operations of the Co. were based: that test we have no purpose in here repeating. The quinquennial results were as follows:

Age.	Numbers living.	Numbers dying.	Rate p.c. of ann. mort.	No. out of which one person will die annually.	Expectation of life.
10	100,000	741	0.741	135.00	49.24
15	96,309	735 .....	.763	131.03	46.03
20	92,644	732 .....	.790	126.60	42.75
25	88,980	735 .....	.826	121.11	39.41
30	85,299	738 .....	.866	115.53	36.00
35	81,603	740 .....	.907	110.24	32.52
40	77,917	726 .....	.932	107.25	28.94
45	74,305	750	1.010	99.03	25.23
50	70,172	941	1.341	74.56	21.56
55	65,208	1,086	1.666	60.02	18.00
60	59,242	1,399	2.361	42.35	14.55
65	51,331	1,878	3.659	27.33	11.39
70	40,896	2,427	5.935	16.85	8.64
74	30,577	2,705	8.847	11.30	6.86
79	17,669	2,298 .....	.....	.....	5.09
84	7,732	1,466 .....	.....	.....	3.63
89	2,156	630 .....	.....	.....	2.35
94	213	110 .....	.....	.....	1.28
99	1	1	100,000 .....	.....	.50

After making various comparisons with other existing tables, Mr. Homans remarks:

We here find that our adjusted experience gives a higher expectation of life at all ages than the co's. theoretical table, and also higher than any English table below the age of 70, except the "Friendly Sos.," according to Neison, which is uniformly higher at all ages. At and above the age of 70, the expectation by several English tables is higher than that shown by our own experience. The favourable results in the experience of this co. may be attributed to two principal causes, namely, the influence of selection, by which persons in sound health only are admitted as members of the Co., and the fact that among these members are to be found so many married men as heads of families.

MEECH'S TABLE (1860).—Mr. Meech, a well-known American actuary, has deduced a mort. table for white male life, from the results of the U.S. census of 1860, of which the following is an abstract:

Age.	Expectation.	Age.	Expectation.
Birth	41.01	50 years	21.22
5 years	51.05	60 ,,	14.93
10 ,,	48.44	70 ,,	9.51
15 ,,	44.48	80 ,,	5.41
20 ,,	40.87	90 ,,	2.76
30 ,,	34.51	95 ,,	1.91
40 ,,	27.88		

Mr. Hine, contrasting the results of this table and the Pennsylvania Tables of 1814, with that of 1789, says :

It will be noticed from these figures that the most marked improvement has taken place in young life. The lapse of time has acclimated the American nation ; has increased the efficiency of medical and sanitary science, and the volume of national wealth has secured greater protection and care to the American youth. From 40 onwards the last century go hand in hand, the sturdy forefathers living out their full term of years, sustained by their hardy constitutions ; the descendants of the third and fourth generations preserving through the refinement of the age the longevity of the past.

In May, 1859, a general convention of life underwriters was held in N.Y. for the purpose of exchanging views and devising means for collecting statistical information. The committee on vital statistics, composed of some of the leading actuaries, was appointed, one of its purposes being the preparation of a table of mort. based on the experience of American Life Ins. This committee met just one year afterwards (May, 1860), and reported progress. Has anything since been done?

In 1865 Professor Elizur Wright prepared for the Ins. Commissioners of Massachusetts, of whom he was and had been one of the chief for many years, a table gathered from the experience of all the American offices up to that date. We have not that table at hand, but shall prob. have an opportunity of dealing with it hereafter. The table used for the State valuations in Massachusetts is the EXPERIENCE (Old) with int. at 4 p.c.

The following note will furnish an outline of the results of Prof. Wright's table :

The mortuary experience of 14 cos., reported to the Commissioners of the State of Massachusetts, which was equal to about 50,000 years of life, prove that life in the U.S., at ages between 31 and 55, is not subject to as high rate of mortality as similar returns prove it to be in Gt. Brit. and Germany. It was also shown, by facts in possession of the cos., that at middle ages, life is subject to a lower rate of mort. in the States than in Europe ; while, at the two extremes, at younger and older ages, it is the reverse.

In 1866 the experience of the *Mutual Benefit* of New Jersey was brought down to that date.

AMERICAN EXPERIENCE (1868)—HOMANS' TABLE (NO. 2).—Soon after 1864 Mr. Homans again made an investigation into the affairs of the *Mutual*, which now covered an experience of 20 years. The results of this investigation, we believe, have not been made public in the same manner as the former ones. In the absence of such exact details, we gladly avail ourselves of some observations of Professor C. F. McCay (*Spectator*, July, 1870) :

As this co. was growing rapidly, each new period of five years doubled its experience. The deaths were now more numerous than at Carlisle ; they were reported with more accuracy ; the numbers of the living and the dying were both more reliable ; and the table obtained from the observations was constructed with more ability and skill by Mr. Homans than by Mr. Milne. It thus surpassed the Carlisle in every particular. Compared with Dr. Farr's, it was founded on fewer observations, but these were on ins. lives, and not on the general pop. ; which made it more valuable for the uses of a life co. If we compare it with the Actuaries' [OLD EXPERIENCE], it had two advantages. It was founded on American experience, and not on policies, but on lives. The disadvantages were, however, serious ; the observations were fewer, and the duration of the ins. shorter ; and to weigh these properly, we will consider the two tables carefully, and examine particularly the grounds on which they may claim our confidence.

We shall have occasion to notice some of Mr. McCay's criticisms hereafter.

The table referred to by Professor McCay is the new table of Mr. Homans, first made public in 1868, after it had received all the careful consideration, adjustment, and elaboration, which its talented author had, alike by study and experience, qualified himself to bestow upon it. It will be seen that the expectation shown by this table differs somewhat materially from that shown by the table of 1859. Here is the new table :

AMERICAN MORT. TABLE—HOMANS, 1868.

Age.	Numbers living.	Numbers dying.	Expectation of life.	Age.	Numbers living.	Numbers dying.	Expectation of life.
10	100,000	749	48.72	28	86,878	718	36.73
11	99,251	746	48.08	29	86,160	719	36.03
12	98,505	743	47.44	30	85,441	720	35.33
13	97,762	740	46.82	31	84,721	721	34.62
14	97,022	737	46.16	32	84,000	723	33.92
15	96,285	735	45.50	33	83,277	726	33.21
16	95,550	732	44.85	34	82,551	729	32.50
17	94,818	729	44.19	35	81,822	732	31.78
18	94,089	727	43.53	36	81,090	737	31.07
19	93,362	725	42.87	37	80,353	742	30.35
20	92,637	723	42.20	38	79,611	749	29.62
21	91,914	722	41.53	39	78,862	756	28.90
22	91,192	721	40.85	40	78,106	765	28.18
23	90,471	720	40.17	41	77,341	774	27.45
24	89,751	719	39.49	42	76,567	785	26.72
25	89,032	718	38.81	43	75,782	797	25.99
26	88,314	718	38.11	44	74,985	812	25.27
27	87,596	718	37.43	45	74,173	828	24.54

Age.	Numbers living.	Numbers dying.	Expectation of life.	Age.	Numbers living.	Numbers dying.	Expectation of life.
46	73,345	848	23'80	71	36,178	2,448	8'00
47	72,497	870	23'08	72	33,730	2,487	7'54
48	71,627	896	22'36	73	31,243	2,505	7'10
49	70,731	927	21'63	74	28,738	2,501	6'68
50	69,804	962	20'91	75	26,237	2,476	6'28
51	68,842	1,001	20'20	76	23,761	2,431	5'88
52	67,841	1,044	19'49	77	21,330	2,369	5'48
53	66,797	1,091	18'79	78	18,961	2,291	5'10
54	65,706	1,143	18'09	79	16,670	2,196	4'74
55	64,563	1,199	17'40	80	14,474	2,091	4'38
56	63,364	1,260	16'72	81	12,383	1,964	4'04
57	62,104	1,325	16'05	82	10,419	1,816	3'71
58	60,779	1,394	15'39	83	8,603	1,648	3'39
59	59,385	1,468	14'74	84	6,955	1,470	3'08
60	57,917	1,546	14'09	85	5,485	1,292	2'77
61	56,371	1,628	13'47	86	4,193	1,114	2'47
62	54,743	1,713	12'86	87	3,079	933	2'19
63	53,030	1,800	12'26	88	2,146	744	1'93
64	51,230	1,889	11'68	89	1,402	555	1'69
65	49,341	1,980	11'10	90	847	385	1'42
66	47,361	2,070	10'54	91	462	246	1'19
67	45,291	2,158	10'00	92	216	137	'98
68	43,133	2,243	9'48	93	79	58	'80
69	40,890	2,321	8'98	94	21	18	'64
70	38,569	2,391	8'48	95	3	3	'50

We have said the table was made public in 1868. The manner in which that was accomplished was by the legislature of the State of N.Y. making it the standard for their State valuations. To this end the Ins. Law of 1853 and 1866 was amended by the add. of various provisions, of which the following only are material for our present purpose :

SEC. 13. It shall be the duty of the Superintendent of the Ins. Department to arrange the information contained in the statements required in the last section in a tabular form, or in abstracts, and to prepare the same for printing in his annual report to the legislature. It shall also be the duty of the said Superintendent, at least once in every five years, and ann. in his discretion, to make valuations of all the outstanding policies, additions thereto, unpaid dividends, and all other obligations of every American L. Ins. Co. transacting bus. in this State; and for the purposes of such valuations, and for making special examinations under the 17th section of this act, and for valuing registered life and other policies under chapter 708 of the laws of 1867, the rate of int. assumed shall be *four and a half p.c. p.a. and the rate of mort. shall be that established by the American Experience Table, in which table the expectation of life and the numbers of living and dying at each age from ten to ninety-five out of one hundred thousand persons living at age ten, are as stated in the schedule hereto annexed.*

The Superintendent may, in his discretion, vary the above standards of int. and mort. in cases of cos. from foreign countries, and in particular cases of invalid lives or other extra hazards. The superintendent may also, in his discretion, value policies in groups, use approximate averages for fractions of a year and otherwise, and calculate values by the net, the actual, or the gross premiums or otherwise, deducting in cases of gross valuations, from the gross value of future premiums, *one-sixth thereof for future expenses and contingencies.*

The act was passed 6th May, 1868, and took effect immediately. The former standard of valuation in that State had been the ENGLISH TABLE, with 5 p.c. int. Since the adoption of the AMERICAN EXPERIENCE TABLE by the State of N.Y., the States of MICHIGAN and MISSOURI had adopted it, each in 1869.

The individual offices were not called upon by this act of the legislature, or any other, to alter their tables of rates, etc. They may still, for their own purposes, retain or adopt any table they please for their internal working; but all their operations will be from time to time measured by the AMERICAN EXPERIENCE TABLE. Some of the offices have already adopted the table. The Ins. Commissioners of Massachusetts have not yet adopted it; but it has been under their consideration. A belief is entertained in many quarters that it will ultimately become the *National Standard Table* of the U.S. The elaborate tables of the N.Y. Ins. Department [ACTUARIAL TABLES] are all based upon it.

On the subject of these tables issued by the department, as also on the adoption of Mr. Homans' table by the State Legislature, the following passage from a circular from the then Superintendent, Hon. Wm. Barnes, should be preserved; the more so as it is the only utterance of his upon the latter question which we can recall :

To persons experienced in the construction of tables of this nature, it is entirely unnecessary to speak of the many elements of error which perpetually gravitate towards the printed page. More than ordinary precautions to insure accuracy have been taken in the preparation, printing and electrotyping of these tables. The herculean nature of the work must be apparent to any one, but more especially so to the mathematician and actuarial expert. The actual results in net values according to the new standard of int. and mort. adopted in this State are especially gratifying; and the "American Experience" at four and a half p.c. int. will commend itself to officers, act., cos., and legislatures, as the most practical and best standard yet compiled for the various purposes of life ins. *Whenever American experience shall have been more thoroughly tested by our cos. having reached their maximum and decline, it may be advisable to recollate and tabulate the statistics of all of them; but this period is too remote for present purposes.*

This table of Mr. Homans, as was to be expected, has been the subject of a great deal of criticism by American actuaries. Professor Wright has said of it :

I think the rate of mort. Mr. Homans proposes is somewhat better graduated than Dr. Farr's table. It is free from some of the imperfections and anomalies of that scale; but the general effect of it is to reduce the initial value and to make the grade of the self-ins. a little steeper. The gradulation is hardly as perfect, I think, as that of the Actuaries' scale, though I have not examined it sufficiently to test that point. I have examined it for only one rate of interest—4½ per cent., and with regard to a limited number of single prems., a few endows., and ordinary life prems. I think it preferable to the Carlisle table, and preferable to Dr. Farr's; but for some of the ages, I think it is affected with the peculiar experience of the *Mutual* Life Co. which we all know was estab. by a subs. of policies to be ins., including rather advanced lives and a good many not very good risks; so that the losses, for the first fifteen years, as compared with the expectation by the Carlisle Table, over the age of 54, were in excess; whereas, taking all the lives together, they did not lose so much as was to be expected by that table.

Again, and on a separate occasion :

That standard is what Mr. Homans calls "American mortality;" but I presume it is derived chiefly from the experience of the *Mutual* Life, so far as it is not purely hypothetical. That has been adopted as the standard for valuation in the State of N.Y., together with a rate of int. of four and a half p.c. The principal change affecting the value of policies is the half p.c. add. int. The mort. being a little more favourable, brings the values down somewhat more than the English; but as the rate of int. is reduced only one-half p.c. instead of one p.c., it does not produce so great a change as the former rule, Dr. Farr's rate of mort. with five p.c. int. It makes a pretty important change in paid-up insurance, reducing the value about ten p.c.

Mr. White says :

Unless I am misinformed, the table prepared by Mr. Homans covers really an experience from 30 to 74 only in his own co., and the numbers down to 10 and up to 95, are run out on what he calls "general principles," and not actual from experience; and inasmuch as they do not agree with Farr's or with the Carlisle table on these older ages, it would seem probable that the "general principles" have led him into an error in regard to those ages. One thing more. All these tables, so far as I have observed them, seem to run the duration of life up to 103 or 105, which is in accordance with the experience shown by our own census tables; but Mr. Homans' table runs them all out at 95, and leaves none living, making the duration of life apparently 8 or 10 years less.

Prof. McCay (*Spectator*, July, 1870) says :

Mr. Homans' American Table has been much esteemed. It has been adopted by many life cos. not only for the prems., but for the valuation of pol. and the distribution of surplus profits; . . . and as American experience is attractive, and the actual experience of large and ancient life offices form the very best basis for the future expectation of mort. among the lives ins. by our cos., this table presents great claims to the favour and approval of American actuaries. It is well adjusted, admirably constructed, and has added much to the reputation of the distinguished act. of the *Mutual* of N.Y. With all these recommendations in its favour, it is nevertheless the duty of every one to consider its claims with fairness and impartiality.

The learned Prof. then makes a series of comparisons between this and other tables, of which we shall avail ourselves in speaking of some of those tables. He says down to 1858 the oldest life ins. in the *Mutual* office was only in his 78th year; and the number over 65 was less than seventy.

Referring to this table running out at age 95, he says :

In almost every table there are some survivors after the age of 95. Out of 100,000 at 10, the Actuaries has 37; Dr. Farr has 155; and the Carlisle 356; but Mr. Homans has none. At the age of 77 his rate is below the Actuaries'; five years later it is 5 p.c. higher; ten years later the excess is 25 p.c.; and 15 years later it is 57 p.c. At 77 it is 3 p.c. below Dr. Farr's, at 82 it is 7 p.c. above; at 87 it is 37 p.c. higher, and at 92 more than a 100 p.c. higher. At 76 it is below the Carlisle; at 81 it is 14 p.c. higher; at 86 the excess is 37 p.c.; and at 91, 87 p.c. The rapid progress from the age of 75 upwards is even in excess of the Old Northampton, and of every other good table; and as the *Mutual* Life could not have had more than 4 or 5 deaths at these higher ages, it is difficult to guess where Mr. Homans could have obtained any authority for these high rates at the older periods of life. There is nothing in the mortuary reports of our cities that justify them; and the private experience of almost every one will tell him that some of his acquaintances have lived beyond 96, which is the extreme of human life according to this American table.

Mr. D. P. Fackler thus spoke of it at the National Ins. Convention, 1871 :

The differences between rates and valuations on the American Experience Table, and the same on the Actuaries', are quite trifling—about as much as the variations that would be due to a difference of one quarter p.c. in the rate of int. I think the American Experience Table is a better index of the mort. of American cos. than the Actuaries', and should be very glad to see it adopted [by the States generally]. It should, however, I think, be better graduated so as to correspond to its author's orig. ideas. If it were made on a basis of 10 millions of lives instead of 100,000, the graduation would be perfect. As it is now it is quite irregular. There are such differences in the successive results obtained from it that one is often led to think that he has made some considerable error. . . . A table for State purposes ought to be perfectly graduated, so that the numerous tables based on it would be susceptible of check by the method of differences.

Mr. Edwin W. Bryant, one of the most accomplished actuaries in the U.S., and now the actuary of the N.Y. Ins. Department, says :

The table shows a lower rate of mort. than the *English* (No. 1), or than the *Experience* table from 30 to 77. At the other ages a higher rate than the last-named table. In this particular it is confirmed by the experience of the *Mutual* since 1858, as well as before, and by that of several other American Life Cos.

The first complete valuation of all the policies existing on the books of the Life offices transacting bus. in the State of N.Y. was made by the Superintendent of the Ins. Department in 1870. It embraced over 650,000 separate policies in existence at the close of 1869. This was made upon the AMERICAN EXPERIENCE TABLE.

There is one especial feature which remains to be noticed, and it is that in the State

valuations the limits of life are fixed. "In our calculation (said Prof. Wright to the National Ins. Convention, 1871) we cannot admit of any indeterminateness as to the termination of the risk ; therefore we assume 100 in Massachusetts, or 96 as the limit in N. Y." In the preface to the new ed. of his table he says, more at large :

The combined experience on Actuaries' rate of mort. assumes that of 100,000 persons living at the age of 10, the last will die in his 99th year. Consequently it is assumed, in calculating the prem., that the claim on any pol. must be paid at the end of that year if not before, notwithstanding that by the terms of the pol. it is not payable till death, and there is no impossibility of a party living some years beyond the age of 100, and paying prems. in each of those years. Hence it will be seen that in the tables [of the department], every whole-life pol. both as to prem. and reserve, is treated precisely as if it were an endowment pol. payable at 100 or previous death.

We don't find that the offices using the Experience Table, in the conduct of their bus. adopt this limit, or those using the American Experience Table the limit of 96 ; but it would be an excellent thing to do in each case. It is one great drawback to life ins. the encumbering of very advanced age with the payment of prems. Of course there is the annuity aspect of the case to be considered.

AMERICAN OFFICES TRADING IN EUROPE.—After several years of "prospecting," the American offices have finally "invaded" Europe. The following is something like the order of their coming. The *Germania* Life of N. Y. commenced operations in Germany in 1868 or 1869. The *Home* Fire of N. Y. commenced in Germany and in England towards the close of 1869. The *Equitable* Life of N. Y. commenced in Ireland and in the North of England early in 1870. The *New York* Life commenced in Lond. and on the Continent of Europe in April, 1870. The *North America* Life, and the *National* Life (of N. Y.), each towards the autumn of 1870. We shall give an outline of each of these offices under its alphabetical title. Several of them are doing a very successful bus., which the recent crusade against them has, by drawing extended attention to their real merits, as against their imaginary demerits, helped to foster. The *North America* has taken over the Life bus. of the *English*. The *New York* Life is in negotiation for taking over the entire bus. of the *European*. It would be a great blessing to the policy-holders to find themselves in such a sound co.

The recent fire at Chicago will involve a loss of something like £400,000 on the *Home*. The available assets of the Co. on 31st December last, were (including £500,000 of paid-up cap.) £900,000. After payment of this loss, the cap. will remain intact ; and the proprietors will immediately reinstate a reserve fund of £300,000. This is the way to deserve and secure confidence.

AMICABLE CONTRIBUTION.—The name under which the *Hand-in-Hand* was orig. founded in 1696. In 1698 it took its present name.

AMICABLE MUT. LIFE ASSU. SO., founded in Dublin in 1867, with a guarantee fund. The advertisement said :

Amongst the many new features of this office the following may be noticed:—Parties can insure cheaper in this society than almost any other ; indeed, in many cases a policy for £1250 could be issued for the same prem. as charged by other offices for £1000. Parties insured with this So. know exactly the surrender value of their policies from year to year, without having recourse to the office ; and policies may be surrendered after payment of first year's premium. Non-forfeiture of premiums paid.

Mr. J. Innes was the founder of the Co. ; Mr. Albert J. Deacon the Sec. The bus. was worked in connexion with the *Etna* Fire. In 1868 its bus. was trans. to the *United Ports and General*.

AMICABLE SO. FOR A PERPETUAL ASSU. OFFICE.—The formation of this So. dates back to the 24th January, 1705, but it was not until the 25th July, in the following year, that the promoters, the Lord Bishop of Oxford, Sir Thomas Aleyn, Bart., and others, obtained from Queen Anne a charter (granted in the 5th year of her reign) for incorp. them, and their successors, by the name above given, with power to purchase lands, sue and be sued, and to have a common seal.

The preamble to this charter sets forth the objects of its founders very succinctly :

ANNE, by the Grace of God, Queen of England, Scotland, France and Ireland, Defender of the Faith, etc. : To all to whom these Presents shall come, Greeting : Whereas Humberstone Baron, John Hartley, William Spenceley, Richard Musgrave and Others, have by their humble petition represented unto Us, That they have agreed upon and entered into a voluntary Society, for the mutual benefit and interest of every person that shall at any time be a Member thereof, in order to provide for their Wives, Children and other relations, after a more easy, certain and advantageous method than any that hath hitherto been thought of, by an Amicable Contribution, according to certain Articles or Agreements entered into by the said Petitioners for the purposes aforesaid. And it has been humbly certified unto us, that their design will be of singular Use and Relief to many Families, by providing for great numbers of Widows and Orphans, who might probably be otherwise left wholly destitute of a maintenance by the sudden death of those on whom they depend. And the said Petitioners have therefore humbly prayed Us to incorporate them and all others that are or shall be concerned in the Society of Perpetual Assurance Office, etc. Now know ye That we being graciously pleased to gratify the said Petitioners in their said request, and to encourage the said undertaking of our especial grace, certain knowledge and mere motion have granted, etc.

Her said Majesty thereby constituted the persons therein named and all other persons who should be admitted to be subs. to the So. therein named, according to the directions thereafter contained, not exceeding the number therein mentioned, one body corporate and politic in deed and in name, by the name of *The Amicable So. for a Perpetual Assu. Office*, with perpetual succession and with power to take, purchase, hold, and retain to them and their successors any manors, lands, tenements, rents, hereditaments, goods, and chattels, and to do and execute all and singular other matters and things necessary relating thereto, and to sue and be sued and to have and use a common seal for the affairs

and business of the said Society, and to grant pol. of assu. under the seal of the said Corp., entitling the nominees of the subscribers or members of the said So. to such dividends as therein mentioned, and to make and raise a joint stock or fund from time to time for the ends and purposes therein mentioned; and by the said Charter it was ordained that the affairs and business of the said Corp. should be ordered, managed, and directed by twelve members of the said So., to be annually elected directors of the said So., in the manner therein prescribed; and at any general court (not consisting of less than twenty members of the said Corp.) it should be lawful for the members there assembled to make bye-laws, rules, orders and ordinances for the good government of the said *Amicable* So. and the members and affairs thereof, and to alter, change, or annul the same, or any of them, so as such bye-laws, rules, orders, and ordinances, should be reasonable, and not repugnant or contrary to the laws or statutes of this realm, or to the prejudice of any other co. or corp.

The number of persons to be incorp. was not to exceed 2,000, but might be less; each person was to receive a pol. under the seal of the Corp. entitling his nominee or assigns to a dividend on his or her decease, in the manner mentioned in the Charter, viz., if there were the full 2,000 members then, *one-sixth of the contributions amongst those who so died during the first year.* In the second year the sum of £4,000 was to be divided amongst the representatives of the deceased members; in the third year, £6,000; fourth year, £8,000; fifth year, £10,000, and so ever afterwards, *with so much more as should be agreed by a general court of members to be held ann.* If there were not the full 2,000 members, then the ann. divisions were to be in proportion to the actual numbers. The remainder of the funds, together with interest realized thereon, as also the purchase-money for *annuities* sold to the members, was to accumulate for the benefit of the members generally.

The contribution to the funds of the So. was to be £6 4s. p.a. In add. to which the first 2,000 members were each to pay *five shillings* to the registrar of the So. [HARTLEY, JOHN], and *five shillings* to the joint stock of the So. All subsequent members were to pay 10s. to the joint stock. Each member was to have one vote at the general courts. Directors were to take oath for the due performance of their trust. They might hold courts when and as often as they thought fit; they might admit or reject members. A register of the members was to be kept, to which all persons interested might have access without fee. In case of death authentic certificates were required to be produced. The So. was not to deal in bills of exchange, or enter upon the business of banking, nor deal in bullion, on penalty of forfeiture of the charter. The patent of the charter was declared valid at law, and was to be construed in the most favourable sense to the So.—contrary to the modern practice of interpreting all conditions and covenants against ins. asso.

The preceding are the chief provisions of the orig. charter; and to insure accuracy we have extracted the same from an authenticated copy. This was the more necessary, as we have not found any previous writer who has taken the trouble to give accurate details of the original plan of this So.

It will be observed that in the foregoing scheme there is no limitation as to age; the contribution being the same from all members—the advantages the same to all who died in *any one year.* If the deaths were few in any particular year, the sum to be divided would of course produce larger results to each participant. The directors, indeed, had an optional power of admitting or rejecting applicants; and hence they could take into account age, condition of health, etc. But there was this peculiar provision in sec. xii. of the Charter, that subscribers or members might “change their nominees,” on delivering up the former policy and paying *two shillings* for a new one!

All the affairs of the Corp. were to be managed by the court of directors, in accordance with the powers granted by the charter and the bye-laws. The number of directors was never to be less than 12, chosen yearly from among the members within forty days after every 25th day of March. And at least four of the directors of the preceding year were always to remain in office, “if so many shall then inhabit within the bills of mort.,” to “instruct the rest of the newly-elected directors in the government and management of the affairs of the said So.”

The So. had power to make bye-laws at general courts of not less than twenty members. This power was first exercised in 1707; and some of the matters upon which the orig. charter was silent were regulated by these means. It thus came to be provided that all persons at the time of their admission as members must be between the ages of 12 and 45, and *must then appear to be in a good state of health*; persons living in the country might be admitted by certificates and affidavits, forms being supplied by the office. Any person might have two or three several ins. (or numbers) on one and the same life, whereby such person “would be entitled to a claim on each number so insured.” The registrar of the So. was called upon to find security for £2,000.

Five members of the So. were elected annually to audit the accounts, who were by their office to inspect every transaction of the So., to examine all vouchers for receipts and payments, and upon oath to lay before the quarterly and annual general courts, the quarterly and annual accounts of the So. Auditors were first appointed in 1708.

The actual plan of working can only be inferred from the foregoing; it would appear to be this: at the end of the fourth year, there being 2,000 members, the sum of £10,000 p.a. was to be divided amongst those who died during the year. This would require the sum of £5 per share or member; the bal. of the contribution being left to accumulate. At this period the ordinary prem. to insure £100 for one year was £5. This rate was

charged by the underwriters ; it was natural that it should be adopted here. If 100 persons died each year out of the 2,000 members, £100 each would be secured. If a larger number of deaths, a smaller sum ; if a smaller number of deaths, a larger sum. The element of certainty was still wanting.

It has been said that Sir Thomas Aleyn had gained certain notions of the chances of human life from a study of the weekly bills of mort. He had seen by these little black-bordered sheets, issued every Thursday morning, by the Hon. the Co. of Parish Clerks, that about one in every 20 of the estimated pop. of Lond. died ann., and that upon this pivot of knowledge the So. was founded. We suspect, however, this may have been an after-thought, invented or suggested with a view to elevate it a little above the speculative asso. of the period.

The method of selecting lives appears to have been orig. that the persons proposing appeared personally before the court of directors, each director having the privilege of putting any questions he pleased to the applicant for admission, and on his withdrawing to pronounce their opinions, seriatim, as to the eligibility or otherwise of the proposed insurer. There was no formal medical examination. All persons coming within the rules of the So., and appearing in a good state of health, were eligible as members. At a later period of the century all persons applying for membership were required to give, in writing, their names, places of abode, professions, and ages ; and such applicants could not be admitted members if they were in the army or navy, or likely to reside in foreign parts, or of dangerous occupations.

The charter authorized the commencement of bus. as from the 25th March, 1706. The number of subs. in that year was 875, of whom 29 died. The share of div. for each was £30 2s. 9d. £875 only being divided. In the 2nd year the number of members was the full 2,000, of whom 96 died. The sum divided was £4,000, each share being £41 13s. 4d. In the 3rd year, out of 2,000 members, 122 died. £6,000 was divided, each share realizing £50 3s. 6½d. In the 4th year 87 members died ; £8,000 was divided, each share being £91 19s. 0¾d. At that time the capital stock of the So. had reached £25,000. In the 5th and subsequent years £10,000 was divided ; but we find no return of the number of deaths.

It would appear that the charter given to this So. was regarded by it as a sort of monopoly ; for in 1707 or 1708, on some other persons endeavouring to obtain a charter for the ins. of lives, this So. was heard by counsel against the same, and the granting of their charter was stopped at the Great Seal.

Hatton, in his *New View of Lond.*, pub. 1708, speaking of the ins. asso. says :

A third is the *Amicable So.*, or Perpetual Assu., whose office is kept against St. Dunstan's Church, in Fleet Street, settled by patent July anno. 1706, who for 5s. entrance, 5s. into the joint stock, 1s. for the stamp, £1 11s. p. quarter, do divide among the claimants at the end of every year, at the 25th March, thus : £2000 the first year, £4000 the second, £6000 the third, £8000 the fourth, £10,000 the fifth year, and at least £10,000 ann. ever afterward (the So. to consist of 2000 persons, none to be admitted under 12 nor above 55), and the remainder of the yearly payments to be improved for the benefit of the So.

In 1710 there was pub. : *The Charter of the Corp. of the Amicable So. for a Perpetual Assu. Office, together with the bye-laws thereunto belonging ; also an account of the numbers that have died in each year, and the sum of the yearly dividends that have been paid.*

In 1711 it was announced in the public papers that several policies of ins. out of Mr. Hartley's office were to be sold, "Enquire at the Cheshire Cheeze, in Flower de Luce Court, Fleet St."

In a prospectus for another perpetual ins. office, issued in 1712, is the following : "An instance of Her Majesty's favour to incorp. a number of persons, when it is not against the laws of the nation, but for the public good, is that of Mr. Hartley's office, which is proved to be for a general good, and is settled upon a solid foundation."

It will be seen that Mr. Hartley's name was very prominently associated with the So. He had been its acting manager from the beginning, and was named in the charter. It now becomes necessary, as part of the hist. of the So. itself, to give some details concerning him.

Mr. Hartley's salary, under the charter, was settled for 14 years certain, and as many years after as he should live, at £300 p.a. He was to be allowed for two clerks £100 p.a. ; for a messenger, £26 p.a. ; and for house-rent, coals, and candles, £40 p.a., making in all £466 p.a. During the earlier years of the So. one of his clerks made some embezzlements amounting in all to £1,700 and upwards. Mr. Hartley "felt bound to make good this amount." He did so by selling to the So. £250 p.a. of his own salary, so that thereafter he received but £50 p.a. for his personal services. This was considered a very honourable proceeding on the part of Mr. Hartley ; but unfortunately his next financial act cannot be regarded quite in the same light, and it almost looks as if he had become too honest to remain honest. In May, 1713—but we had better quote from a document pub. under authority :

When the money was got together to pay the claims of the preceding year, and lodged in the hands of the then treasurer [Mr. Hartley] for that purpose, he withdrew himself with a very considerable sum of money, which for a time brought some disrepute upon the So., and involved the So. in great troubles and difficulties. Note. The ballance of cash in his hands on the 20th of April, as afterwards appeared when the books were made up, was £4968 17s. 11d., which together with what he received

after that time, and before he withdrew himself, and with tickets in lottery 1710, and lottery 1712, which he sold, amounted to £6500 and upwards. Upon which (continues the report) the treasurer and his securities were prosecuted at law, until at a general court held 13th Nov. last, they offered £4000 by way of composition, and the general court agreed to accept it and some other matters in full. [Note, the £4000 was paid and laid out for the benefit of the So.] *And though this has been the greatest loss that ever befel the So.; yet 'tis hoped that the great care which has since been taken to estab. a better way of management than was known before, will in great measure compensate that loss.*

The document which we quote then attempts at some length to justify the directors in the trust they had placed in Hartley, and which he so sadly abused.

It is proverbial that misfortunes never come singly, and so we again quote from a document of the period :

Another misfortune which befel this corp. about the same time was, that one Wall, who pretended himself to be a very great accountant, and was taken in at first to review the state of the charge against Mr. Hartley, as the same had been made out by the auditors; and who after he had spent a year in the accounts agreed with the auditors in such their charge within a very trifle, and was afterwards continued in the said office under the title of accountant, and a salary of £50 a year was allow'd him; and being in the office, took upon him to fill up receipts for contributions and embezzled the money; but was soon detected and turned away, and will be prosecuted if there be any hopes of getting anything from him. Note. The loss by Wall is about £300.

But, say the managers, notwithstanding all these seeming difficulties which have justly occasioned differences, distrusts, and jealousies among the members of the corporation; the So. is now fix'd on a better foot than ever, and it is hoped will on examination be found to be the best of the kind now known.

In 1713 was pub. *A True State of the Amicable So. at the corner of Dean St., Fetter Lane; with reasons for altering the Government of, and estab. that So. on a solid and sure foundation.* This pamphlet was pub. by an outside hand, and we have discovered the reasons for his proceeding. We had better give these in the terse phaseology of the period :

In August last a person who called himself Proprietor, proposed to the directors a scheme or project, which he pretended would be of very great advantage to the Society, and insisted to have £500 down and £250 p.a. for such his project, if made use of; but on perusing the same, no advantage appeared but to himself, whereupon it was utterly rejected as useless and insignificant, and so far from being worth such an exorbitant reward, that it was not worth the least notice, which is the reason the directors have saved themselves the trouble of exposing him and his fallacious project, he having sufficiently exposed himself thereby.

And as to the airy satisfaction which this famous projector buoys himself up with of getting a new charter, it may be wonder'd what assurance he can have to flatter himself and endeavour to delude others after such a manner. If he would but consider what difficulties the gentlemen concerned in the late office in Raquet Court now labour under on that account, who seem to have as good reasons to hope for the royal favour as any new projector of such a society can have.

The projector must also be told of a charter for ins. on lives, which was passed as far as the Broad Seal, and stop'd there by the late Lord Chancellor Cowper, on hearing this Society's counsel against the same, altho' such charter passed the then Attorney or Solicitor-General, and all other offices.

In the same year (1713) a further bye-law was made as to arrears of the quarterly payments of £1 11s. For non-payment of one quarter, 1s.; two successive quarters, 3s.; three, 6s.; four, 10s.

In this year also the following notice appeared in the newspapers: "The Corp. of the Amicable So., etc., give notice, that in pursuance of the power given them by their Charter, they will grant *annuities* to any member not exceeding £50 p.a. on life." This, we suspect, may have been adopted with a view to replenish the exchequer.

We do not discover precisely the nature of the scheme referred to in the "*True State, etc.*" But in the *Courant* of 19th Feb., 1714, we find the following :

Whereas a scheme was lately proposed to the Corp. of the Amicable So., not only to lessen but to take off their yearly payments of £6 4s. in 7 years. The same proving contrary to their charter could not be made use of, altho' great advantages would have been had thereby; and therefore several members of that So. have encouraged the proprietor to make a new so. of the same number according to the said scheme, which divides £10,000 yearly, or £100 on the death of a nominee. A subs. is to pay 5s. entrance, £4 p.a. for 7 years, and a yearly rebate of £4 on every policy, to be deducted when a claim is received. The So. is to commence the 10th June next, and a book for subs. will be opened the 10th March, at Owen's coffee-house at Simond's Inn, Chancery-lane.

The directors of the So. replied in the *Post-Boy* of 18th March following, thus :

Whereas it has been lately insinuated in several advts. in the *Postman*, that a scheme hath been proposed to the Amicable So., the corner of Dean St. in Fetter Lane, but not made use of as being contrary to their charter; the directors of the said So. do hereby certify, that there are several very material objections to the said scheme, that the premium of £500 to be paid the proprietor according to his proposal, and the £250 p.a. demanded by him for a project which would have increased the charge of the So. and lessened the dividends to the members thereof: Wherefore they did not think fit to make any report in favour of the said scheme at any general court of the said corp. And although printed proposals relating to the said scheme were with great industry distributed to many of the members of the said So., and two general courts of the said corp. held within a month after the distribution of such proposals, yet no person thought fit to offer anything in favour of the said scheme or the proprietor thereof at either of the said courts.

N.B.—The Amicable So. by its charter is to divide £10,000 per ann., but the proprietor by his scheme proposes much less for several years, and though he speaks of £6 4s. p.a. as a large contribution, yet by his scheme the members are to contribute £8 4s. yearly, whereas the payments in the Amicable So. will be reduced to £4 4s. p.a. at Lady-day.

☞ Beware of societies without a charter; remember that of Raquet Court.

The agitation in the affairs of the Society still continued; and in the *Courant* of 14th May, same year, we find the following :

Whereas it has been several times adv. in the *Postman* that a true state of the Amicable So., the corner of Dean Street, Fetter Lane, was printed and sold by N. Crouch, in the Poultry. To prevent

any persons being imposed on by the said advt., the directors of the said *Amicable* So. do hereby give notice, that the account contained in the said state is false, and the proposal therein mentioned impracticable, as will appear by a true account, state, and condition of the said So., printed by order of the Court of Directors, and to be had gratis at their office, the corner of Dean Street, Fetter Lane. And all persons who are entitled to any claims on the said So. for the year 1713, are desired to take notice, that attendance will be given by the directors, at their office, every Wednesday, etc., etc., pursuant to a bye-law on that behalf.

Here is the document referred to in the preceding, compiled by Thomas Hodgson, the new registrar of the So. (appointed 1713) : *An account of the State and Condition of the Corp. and of the joint-stock of the So. as it stood upon the account thereof, made up by the auditors, and brought down to Lady-day, 1714, inclusive* ; wherein it is stated (for we can give only an extract) :

It must be admitted that several persons have thought fit to discontinue their payments and suffer themselves to be excluded either by misfortunes in the world, *or because they thought their member lived too long* : or otherwise some have suffered exclusions for want of putting in new lives after they have received their claims ; and others because the directors would not be imposed upon by bad lives or for that they thought it difficult to get a fit person to appear at the Board of Directors in order to be admitted ; and that by these means 137 of the 2000 policies have fallen into the Society's own hands : But then the directors have from time to time admitted new lives thereon for the benefit of the So., after such exclusions were compleated. And in 1712 the So. had two claims, and in 1713 four claims on account of such policies, besides the benefit of the contributions towards the joint stock so long as the excluded members continued to pay their quarteridges ; however, the corp. will subsist better by the contributions of others than by contributing to its own joint stock ; and the directors taking the same into their consideration, have by the advice and with the concurrence of the acting auditors, proposed methods for sale of all the Society's own policies, which will bring into the Society near £1000 ready money, besides a reasonable price for the joint stock belonging to each policy, and the annual contributions kept up for the future, as may be seen more at large in the printed scheme which has been distributed to the members of the So.

In April, 1715, the following notice was issued by the So. :

This is to advertise the members of the corp. of the *Amicable* So. for a Perpetual Assu. Office, that over and above the £10,000 annually paid to claims, there will be divided among the members of the said So. a further sum of £4000 yearly, from Lady-day, 1715, which sum of £4000 arises from the surplus and int. of the stock, and will reduce the yearly payments from £6 4s. to £4 4s. for the future ; and as this dividend is directed to be made quarterly, £1000 thereof will be distributed among the members at Midsummer next, 1715.

Thus the promised reduction of the ann. contribution to £4 4s. was realized in a contingent form ; the members paid the £6 4s. as previously, and received a quarterly return or abatement.

In 1719 and 1720—South-sea period—when various schemes of ins. were being projected, the managers of this So. were on the alert, and took the precaution to lodge a *caveat* with the Attorney-General against granting a charter to any new undertaking of this description, without this So. first being heard by counsel against it. Thus, on the occasion of the applications to Parl. by the *York Buildings Co.*, and by Sir James Hallet and others, for charters of incorp. to carry on the bus. of life ins., the So. did appear by counsel, and the charters prayed for were not granted. The affidavit of the registrar on that occasion stated the following facts :

That the members of the corp. of the *Amicable* So. did begin to act under their said charter in the year 1706, and have continued to act ever since ; and the directors for the time being have admitted members, granted policies on lives, and improved their joint stock at int. on Government securities and otherwise, which now amounts to £50,000 or thereabouts ; and that the said corp. hath made annual dividends to the claimants of the members of the said corp., who have dyed in each year since the charter was obtained, according to the directions thereof ; and that in the year 1710, and ever since the said corp. hath divided £10,000 p.a. amongst the claimants.

In 1721, the bus. of the *Brotherly* So. (annuities) merged into *Amicable*.

In 1730 (3 Geo. II.), the So. applied for and obtained an additional charter. Its preamble recites that the members had on sundry occasions found themselves reduced to great inconveniences and difficulties for want of some further powers and authorities. These were now granted, and, briefly stated, were as follows : No member was to vote, except real contributors on his or her own life. Directors may administer oaths *relating to the health of proposed members, and to the deaths of members* ; or relating to lost policies. Claims were to be paid as of the year wherein they shall be allowed. Members, their nominees, executors, etc., five quarters in arrear of subscription, were to be excluded on three months' notice in the *Lond. Gazette*.

These amendments indicate what had been found to be the weak places of the original plan ; and show therefore the improvements which were taking place in the management.

It appears that some modification was introduced into the working of the So. in 1734 ; as a general court then determined that a portion of the ann. income of the So. should be retained with a view to equalizing the amounts payable under the policies, and especially for augmenting the sums whenever the ordinary means of division would yield an amount less than £100. It was one of the defects in the orig. scheme that there was no certainty in operations of the So. as to the amount which would be received on the death of a member.

In 1737 all bye-laws, except that of 1713, were repealed, and a fresh series enacted, of which the following are the chief :

No person to be admitted a member under age of 12 or over 45, except in the exchange of policies ; and no member to be admitted at all except with the approbation and consent of 7 directors in court assembled.

Persons living within 15 miles of London seeking membership to appear before board personally, and take oath of being in a good state of health, and having been so for six months preceding, except that the court might nominate a person publicly known.

Persons resident more than 15 miles from Lond. might be admitted on certificates from minister and churchwardens as to health, age, business, or occupation of proposed, and that he was a householder paying scot and lot.

Members five quarters in arrear to be pub. in *London Gazette*. Annual dividends not to be paid until 3 months after death. Blank numbers were to be subject to forfeitures and exclusions in the same manner as filled-up policies. Claimants to allow out of each claim £6 14s., or assign blank numbers to the So.

Proof of death to be furnished by means of affidavit and certificate, within 40 days after Lady-day each year. In case of members dying beyond the sea, claimants to give security to the corp.

In the case of claims coming due to infants, guardians to give security.—Under certain conditions members might have double and treble policies.—Lives in policies might be exchanged with consent of directors.—In case of lost policies, new ones might be issued on security being given for at least £200 on each number.—Claims under lost policies to stand over one year.

No excluded policy to be disposed of or filled up for the benefit of the corp. but by the consent and approbation of two successive general courts.

Register to be kept of all purchases and securities. Also a register of assignments from and after 25th March, 1733.

No part of the capital stock to be divided except with approbation of two successive general courts, except for dividends on claims.

That no more than £1 12s. p.a. be paid to each contributor or member on each number out of the profits of the corp.

That four general courts at least be held every year. Registrar to give security for £2000. *Directors to be disqualified if Registrar embezzle more than he gives security for.* Money might be lent in advance of claims, on bond carrying int.

The bye-laws were 36 in number, and the preceding abstract of them is very brief. There are one or two which deserve more especial notice. Thus No. 2 reads as follows :

That no person be admitted a member of this corp. who shall live in Lond. or within 15 miles thereof, that doth not appear in person before the court of directors, and there voluntarily make oath : " That he or she is in a good state of health, and hath no distemper, which, according to the best of his or her knowledge, judgment, or belief, may tend to the shortening of his or her days : *Except in a case where a list containing not less than seven housekeepers living near each other, or other noted persons living within the bills of mort., shall be proposed to the court of directors for the choice of one : Except also where it shall be left to the court of directors themselves to nominate a proper person.*

And No. 20 shows that the meetings of the So. were regarded as of a strictly private character :

That upon every general court day, the messenger of this corp. shall attend at the door of such place where the court shall be held, from the time of opening the same till the court shall be adjourned ; and shall take effectual care that no person be suffered to come into the said court, who has not a power to vote in this Corp.

In 1736 there was pub. : *A Short Account of the Rise and Present State of the Amicable So. for a Perpetual Assu. Office, together with the Manner, Terms, and Advantages of their Insurances on Lives.*

Maitland, the historian, writing of the So. about this period (1739), says :

It was resolved that of the ann. subs. of £6 4s., the sum of £5 only should be carried into account for annal division. The bal. was to be improved by granting annuities upon the lives of their own members. By which and other good management the So. have a stock of near £30,000 ; whereby they are not only enabled to defray all the expences of the So., but likewise to reduce the ann. payment of the members to £5 each ; and beside this the So. divide about £700 p.a. or so much thereof as shall be requir'd (when the dividend by a great mort. does not amount to £100 on each claim) to pay each claimant £100, "whereby all reductions are effectually prevented, and the Corp. kept in a flourishing condition."

In the report issued by the So. in the year 1749, it is stated (*inter alia*) that : the good intended by the So. on its formation has been steadily pursued, and the So. found to be a common benefit to mankind. This would evidently appear from a statement of the yearly dividends ; from Lady-day, 1710, to Lady-day, 1749, being thirty-nine dividends successively, amounting to the sum of £277,104 and upwards, on 2,967 claims, so that upon an average the amount of each claim had not been less than £93 3s. 7d. ; but they have been considerably more for the fifteen years last past, in consequence of the altered plan of 1734.

In 1757 the accumulated fund of the So. had become reduced to £25,300—about half the amount it stood at in 1720—and it seemed that the So. was suffering in its popularity by reason of the uncertainty attending the sum to be received on the death of a member or nominee. A general court of the members took the subject under consideration, and resolved that each share should not produce less than £125 to the representatives of a deceased member, although it might produce more than that sum. Thus the element of *certainty* was first introduced.

By 1770 the accumulated fund had reached the sum of £33,300 ; and there was then set apart by order of a general court the sum of £4000 consols and £11,000 reduced, together with all future savings arising from the sale of blank numbers and otherwise, as a fund for augmenting the shares of deceased members to the full sum of £150, whenever they might fall short of that sum under the dividend directed by the charter. The effect of this alteration was for several years to increase the number of members, and therefore the amount to be divided in those years. This will appear from the following table :

Table of sums realized per share to the members of the *Amicable* dying in the following years :

1760.....£260	5	3	1766.....£210	4	0	1773.....£259	2	9
1761..... 125	0	0	1767..... 151	0	0	1774..... 206	15	10½
1762..... 125	0	3	1768..... 148	6	8	1775..... 179	13	10½
1763..... 125	0	0	1769..... 164	14	1½	1776..... 194	7	9
1764..... 125	0	0	1770..... 160	15	4½	1777..... 155	9	4½
1765..... 128	8	3½	1771..... 203	6	8	1778..... 207	12	1
			1772..... 182	6	1½			

Some of these recent changes in the plan of the So. were doubtless due to the circumstance of the founding of the *Equitable* Life in 1762. In comparison with the scheme of that So., the orig. scheme of the *Amicable* appeared particularly crude and unsatisfactory.

It was about this time that the subs. was reduced to an actual cash payment of £5 per share.

The So. now issued a prospectus, a modification of its earlier one, which shows that Life Ins. even yet had hardly come to be regarded so much as a means of making provision for a family, as for temporary business purposes. The *advantages* (it says) proposed for members of this So. are principally as follows :

To clergymen, physicians, surgeons, lawyers, tradesmen, and particularly persons possessed of place or employments for life [PLACES FOR LIFE], whose incomes are subject to be determined or diminished at their respective deaths, who by insuring their lives, by means of this So., may now leave to their families a claim or right to receive £150 at least for every £5 annually paid in, and many times a larger sum, as appears by the preceding account. To married persons, more especially where a jointure, pension, or annuity depends on both or either of their lives, by ins. the life of the persons entitled to such annuity, pension, or jointure. To dependents upon any other person entitled to a salary, benefaction, or other means of subsistence, during the life of such person, whose life being ins. in this So., either by themselves, or upon the person on whom they are dependent, will entitle them to receive, upon the death of such person, a claim or claims as before mentioned. To persons wanting to borrow money, who by ins. their lives, are enabled to give a collateral security for the money borrowed. To creditors entitled to demands larger than their debtors are able to discharge, may by a like insurance upon the life of the debtor, secure to themselves the principal sums at the death of the debtor. The above-mentioned advantages are offered chiefly with respect to perpetual ins. of life; but temporary ins. may find no less advantages from this So., as may plainly appear from the following instance.

Some examples are then given :

A.B. has agreed for the purchase of an office or employment, but wants £300 or £400 to make up the purchase-money. He is willing to assign a share of the profits or income of his office as a security or pledge for the repayment of the principal with interest, but cannot obtain a loan of that sum without insuring his life till the whole is repaid, which he is enabled to do by the help of this So. He purchases three blanks or vacant numbers, on each of which he ins. his life, and thereby his assigns become entitled to their several claims at his death, which claims will probably not be less than £150 each, and may amount to more. He assigns and deposits his policies with the lender. He pays to the So. beyond the admission money, for the yearly contributions on the three numbers, no more than £15, which is at the rate of £3 6s. 8d. p.c., and the terms easier than any other offices do insure at, who insure for one year only, and after that are at liberty to refuse any further assistance. Whereas in the *Amicable* the ins. continues till exclusion for the non-payment of the quarterly contributions.

Dr. Price pub. his *Observations on Reversionary Payments*, etc., in 1762. The 3rd ed. thereof appeared in 1773, and therein, speaking of the *Amicable*, he says :

This So. was estab. in 1706, and is the only one I am acquainted with which has stood any considerable trial from time and experience. The ann. payment of each member used to be £6 4s. payable quarterly; but it has lately been reduced to £5. The whole ann. income hence arising is equally divided among the *nominees* or heirs of such members as die every year; and this renders the dividends among the nominees in different years more or less according to the number of members who have happened to die in those years. But the So. now engages that the div. shall not be less than £150 to each claimant, although they may be more. *None are admitted* whose ages are greater than 45, or less than 12; nor is there any difference of contribution allowed on account of difference of age.

This So. has, I doubt not, been very useful to the public; and its plan is such that it cannot well fail to continue to be so. It might, however, certainly have been much more useful, had it gone from the first on a different plan. It is obvious that regulating the dividends among the nominees by the number of members who die every year is not *equitable*; because it makes the benefit which a member is to receive to depend not on the value of his contribution, but on a contingency; that is, the number of members that shall happen to die the same year with him. This regulation must also have been disadvantageous to the So. . . .

At the time of the institution of the *Amicable* Corp. the int. of money was at 6 p.c., and as they admit all between 12 and 45, the mean age of admission cannot prob. be so great as 36. It appears therefore that had they avoided the error now mentioned, and gone from the first on the plan I have described, they might have all along paid to each nominee £172, besides raising a cap. much greater in proportion to the number of members than that I have specified, by the help of the excess of their ann. payments above £5, and some other advantages they have enjoyed. Indeed, I cannot doubt but that with these advantages they might before this time have found themselves able to pay at least £200 to each *nominee*, and at the same time restricted themselves, as they now do, to an ann. payment of £5.

I have already mentioned an instance in which the plan of this So. is not equitable. Another instance of this is their requiring the same payments from all persons under 45, without regard to the difference of their ages: whereas the ann. payments of a person admitted at 45, ought to be double the ann. payments of a person admitted at 12.

Further. The plan of this So. is so narrow, as to confine its usefulness too much. It can be of no service to any person whose age exceeds 45. It is likewise far from being properly adapted to the circumstances of persons who want to make assu. on their lives for only short terms of years. . . .

He goes on to state that all these objections were removed by the plan of the *Equitable*. The So. had divided from its foundation until 1774 the sum of £425,060 14s. 4½d.

among 4,150 claimants. The cost of each policy at this date (1774) was 6s. 6d., by reason of an increased stamp duty.

In 1775 Mr. Charles Brand, who had then become the registrar of the So., pub. *A Treatise on Assu. and Annuities, with several objections against Dr. Price's observations on the Amicable So. and others, etc.* Confining ourselves here to his answers concerning the *Amicable*, we shall note them as briefly as possible.

The So. never was intended for the benefit of a person of the age of 12; nor could it be any advantage to a person of that age to become concerned in a scheme of that kind. The prob. of the ages of persons who are supposed to apply to this So. are those between 20 and 40; *therefore not so much difference in the real value of the age, as the goodness of the life is particularly attended to upon admission, as it draws near to the limited age.*

That this had not always been the practice of the So. may be gathered from his remarks in another part of his vol., viz. :

Had the So. for *Equitable Assu.* on lives experienced the losses which have been sustained by the *Amicable So.*, a very little time would have declared them unable to perform their undertakings, unless by a recourse to those calls mentioned in their D. of Sett.; which were they necessitated to do, they would find it not only injure the credit and reputation of the so. but even subvert its constitution, by the refusal of those who would be found liable to the payment of such calls, notwithstanding all the arguments the Doctor might have in his power to advance for their support.

He sums up his answers to the learned Doctor in these terms :

To these several objections I beg to add, that it plainly appears Dr. Price has not only misunderstood the constitution and intention of this So., but likewise made several objections against it which are of themselves contradictory, and intended to mislead those who might not have either leisure or inclination to examine them.

The *Amicable So.* was founded upon that very laudable principle of making a proper provision for a family which might suddenly be deprived of its support; and has been experienced to have answered the intent by the surprising dividends made for the several years past; *owing to the care which has been taken by the directors in supplying the vacant numbers with such good lives as continue in the So. upon an average of 16 years* (and where the proportion of the life of a woman compared to that of a man may be computed). This judicious conduct in the management of the So.'s affairs has brought it to such an estab. as not to be shaken, but by a gross alteration of its principles; and it is not to be doubted but that in a few years longer under such directions the So. will arrive to the complement prescribed by the orig. charter, when such numbers as may afterwards become vacant will bear very high premis.

Some of his remarks we shall notice more at large under FEMALE LIVES and SELECTION.

In 1778 there was pub. by Mr. Brand : *A Table of the Durations of Lives in the Corp. of the Amicable So. for a Perpetual Assu. Office.* See AMICABLE SO. MORT. EXPERIENCE.

The orig. plan of the So. has been subjected to a good deal of criticism. We propose to record the observations of a few of the leading authorities; and it will accord better with our plan to take them in their chronological order.

One of the earliest writers who drew attention to the defective constitution of this So. was a non-professional one—Mr. Weskett, a city merchant and writer on Marine Ins. He said (1781) :

It is obvious that regulating the dividends among the nominees by the number of members who die every year is not equitable; because it makes the benefit which a member is to receive to depend, not on the *value of his contribution*, but on a contingency; that is, the number of members that shall happen to die the same year with him.

He also pointed out that the regulation was disadvantageous to the So. itself, and showed how and why, in which we need not follow him now.

On the occasion of the promoters of the *Westminster So.* applying to Parl. for an act of incorp. in 1789, this So. opposed the Bill, and employed counsel for the purpose. [LIFE INS., HIST. OF.]

In 1790 (30 Geo. III.) an additional charter (the 3rd) was obtained, which recites that the So. *is desirous of extending its plan*, for the benefit of those who might thereafter be admitted members. Permission was therefore given as follows : The number of members might be extended so as not to exceed 4000 in the whole. New members to pay £7 10s. each on admission, and the £6 4s. ann. subs. As former members died out, the new members were to take up the orig. 2000 shares in the order of the admission of such new members. There then follows this important modification : *£5, part of the £6 4s. ann. contribution of all the members, is to be divided upon death*; the remainder with improvements at interest, to be reserved. Members joining at the later quarters of each year must pay the back quarters. Registrar was to be paid an increased salary according to increased number of members.

At this date the accumulated funds of the So. reached the sum of £64,300, in 3 p.c. annu., together with some property in houses. Out of this amount the sum of £30,000 stock was appropriated in aid of the future mortuary dividends.

After the changes of this year a similar rise in the div. occurred from the admission of so many new members to that which occurred after the changes of 1770; but these effects were temporary only. The increase of members brought the increase of liability; but those who died in the interregnum were benefited. In these instances the So. operated like a tontine reversed. Those who died earliest gained the most.

In 1807 (48 Geo. III.) a new charter was obtained which in a great measure remodelled the working, without changing the constitution of the So. It obtained power by means of this charter to admit into the said body corp. any number of persons to be members

thereof, and contributors thereto, for so many shares upon the life of each person, and upon such greater or smaller payments, by way of prem. and ann. contribution for each share, *according to the age and other circumstances of the person so to be admitted*, and the conditions of their respective pol., as the said So. should, by bye-laws, rules, or orders, to be made in the general courts thereof, direct, order, or appoint, so that no greater number of persons should be members of the said So., or any greater number of shares be existing, than 8,000 members or shares, at one and the same time. The So. was further authorized to grant annuities in lieu of payment of claims, and to purchase pol. for surrender, etc.

The number of shares to be granted to any one member was afterwards fixed by a general court at 12. It was also resolved to admit members between the ages of 8 and 67, at graduated rates; and the entrance fee was considerably reduced, and also graduated according to age. The *whole* of the ann. contributions for every share granted previous to this charter, and *seven-eighths* of the contributions on shares subsequently granted, were to be divided every year amongst the claimants by deaths, which happened in that year; and the corp. then engaged that each share, although it might be more, should not produce less than £180.

The following is an abstract of the table of entrance money and ann. rates then adopted :

Age.	Prem. on Admission.	Ann. Payments.	Age.	Prem. on Admission.	Ann. Payments.
15.....	£1 11 6.....	£3 10 6	45.....	£2 9 0.....	£7 7 0
20.....	1 14 6.....	4 0 6	50.....	2 13 0.....	8 12 0
25.....	1 17 0.....	4 9 0	55.....	2 16 6.....	10 4 0
30.....	1 19 6.....	4 19 0	60.....	3 1 6.....	12 6 0
35.....	2 2 6.....	5 11 6	65.....	3 6 6.....	15 6 0
40.....	2 5 0.....	6 7 6			

The payments were to be made half-yearly; the first at the time of admission.

It appears to have been provided that the reserve fund necessary for the security of the guarantee of £180 p. share should be improved for the benefit of all the members according to their respective interests; and that no division of the cap. was to be made without the consent of two successive general courts of the members of the corp. But the So. became enabled to effect ins. for any number of years, or on the joint continuance of lives, or on survivorships, *or any other contingency of life*.

About 1811 Mr. John Pensam, the then registrar, compiled from the books of the So. its mort. experience, which was found to be more favourable than that shown by the *Northampton Table*. [AMICABLE SO. MORT. EXPERIENCE.] Mr. Francis Baily, writing of the So. at this date, speaks of its plan as being in many respects exceedingly defective, absurd, and inequitable.

In 1823 (4 Geo. IV.) the So. obtained an add. charter—the 5th—authorizing an increase in the shares, from 8000 to 16,000.

In 1825 Mr. Babbage wrote—referring to the regulations of 1807 :

This So. used to divide seven-eighths of the annual payments of the members amongst those who died in the course of the year; but this arrangement having caused considerable inequalities, they have recently taken an average of five years.

In 1836 (6 Wm. IV.) the So. obtained an add. charter—the 6th and last—extending the number of shares to 32,000. This charter contained (*inter alia*) some important provisions regarding valuation and dividends. The actual div. for every share which should become a claim was increased to £200, and the So. was empowered to effect ins. for specified sums on joint lives, or on the life of the last survivor of two or more persons, etc.

In 1837 at a general court held 29th Nov., all the former bye-laws were repealed, and 53 new ones were enacted to meet the requirements of the new charter.

Prof. De Morgan, writing of the So. in 1838, described it as founded rather upon principles of mut. benevolence than mut. ins. as understood at a later period.

In 1841 there was pub. :

Table of Mort. deduced from the Experience of the Amicable So. for a Perpetual Assu., during a period of 33 years ending April 5, 1841. To which are added comparisons of the mean duration and probabilities of life according to the *Amicable So.* experience, with some other tables. By Thomas Galloway, M.A., etc., Registrar of the So. Printed for the use of the members of the So. by order of the court of directors. [AMICABLE SO., MORT. EXPERIENCE OF.]

Farren, in his *Historical Essay on Life Contingencies*, 1844, says :

From the above details it is obvious that such regulations did not constitute a Life Assu. Asso. in the modern meaning of the term, but rather what may be called a *mortuary-tontine*, in which an annual produce was to be divisible among the nominees of the deceased in place of among the survivors, as in ordinary tontine cases. The denomination “perpetual assu. office” was probably, therefore, simply employed in a legal sense to signify that the destined 2000 original contracts or nominee shares, in place of becoming finally cancelled by death, would, like land or real estate, be perpetually “assured” or “conveyed” to various successors.

In 1845 the So. obtained a special Act of Parl., 8 & 9 Vict., c. viii., “An Act to enable the corp. to lend money upon mortgage for the purpose of investment, and also to confer other powers upon the said So.” Of these other powers, the most important were connected with the mode of transacting business, valuations, and the division of profits, viz. : The profits or loss to be taken upon an average of seven years until 1852, and to be continued thereafter at the like periods. Assu. might be effected on single lives for

specified sums, provided that no person should, in respect of any such assu., be or become a member of the said So. A bonus fund to be estab., that is, the representatives of persons assu. might receive in lieu of the actual div. the guaranteed sum of £200 for every share comprised therein, and also add. sums to be periodically added by way of bonus to the account of such guaranteed sum.

Mr. W. T. Thomson has already pointed out (1856) that by means of the new charter of 1836, and the last-named Act, the So. became an ins. office "very nearly on the usual plan."

In 1854 the So. obtained another special Act, 17 & 18 Vict., c. xii., containing add. powers for the purposes of investment.

The accounts of the So. on the 4th April, 1854, showed the following to be its financial position :

Present value of ann. contributions on the various classes of policies, viz. :

1. Single lives ins. for whole term with profits	...	...	£624,743	13	2
2. " short period with profits	...	...	1,984	0	5
3. " whole term without profits	...	...	11,645	13	2
4. Joint lives and contingencies	...	...	3,186	14	2

Values of securities and investments...	...	...	641,560	0	11
	...	...	774,245	3	9

Total assets £1,415,805 4 8

Present value of insurances :

1. Single lives, whole term with parti.	...	...	£1,262,642	18	7
2. " without parti.	...	...	12,462	10	0
3. Joint lives and contingencies	...	...	8,757	19	0
4. Value of bonus	...	...	1,529	8	7

Claims admitted, but not paid	...	...	1,285,392	16	2
Balance in favour of So.	...	...	20,972	5	0
	...	...	109,440	3	6

£1,415,805 4 8

The fixed div. per share at this date was £225 8s.

Mr. F. Hendriks, writing upon the So., at this date, says :

Without entering into details of the changes in plan which about a century and a half of time necessitated, the account of its estab. as given by the *Amicable* on the occasion just referred to (1719-20), is sufficient to show that on its orig. formation it was not a life ins. so., but a benefit inst. for the creation of a corp. purse, by means of the contributions of members, all subscribing a like sum, and settled portions of the contents of which purse were to be divided from year to year, and in equal proportion between the representatives of those contributors who might happen to die within each business year for the time being.—*Assu. Mag.* iv. p. 301.

Notwithstanding the increased Parl. powers, the So. made no progress—indeed, it was retrograding. Its day had gone by, and the managers were among the first to discern the fact. Instead, therefore, of a protracted dissolution, the modern idea of an amalg. was put forward and embraced. Negotiations were in 1864 opened with the *Economic*, and they so far matured that a bill was laid before Parl. seeking the proper authority.

In this said bill the following statements regarding the position of the So. were contained (*inter alia*) :

That the subsisting pols. granted by the So. were of three classes, one entitling the holder to a dividend according to the said recited charters; another entitling the holder to a bonus according to the recited Act of 1845; and the third entitling the holder to a fixed sum, without participation in the profits; and the first class were usually distinguished by the term "charter policies," the second by the term "bonus policies," and the third by the term "policies for specified sums." That the total value of the liabilities of the said *Amicable* So. by virtue of its said several policies on the 1st day of September, 1863, was the sum of £604,500. That with the exception of the said pol. and the unpaid claims on policies on lives now deceased, and the current expenses of its office, and certain small payments to retired officers, the individual liabilities (if any) of the So. were of insignificant amount. That the total value of the funds and property or assets of the So. on the said 1st day of September, 1863, amounted to the sum of £625,000 and upwards. That the bus. of the said *Amicable* So. had of late years greatly decreased, principally from the constitution of the So., which from its mode of assessing dividends on the said charter pol. and the restricted amount of bonus which it could declare upon its bonus pol., placed it at a disadvantage in the eyes of the public with other offices established on a more modern and less fettered system.

This last was a candid admission, but it was true. The arrangement with the *Economic* was not carried through, and we could well appreciate the observation of the N.Y. Ins. Superintendent in his next official report: "We on this side of the Atlantic, out of regard for the general interests of Life Ins. in both hemispheres, may well ask that such a venerable monument of the permanence and perpetuity of the system should be allowed to remain undisturbed." The prayer was not to be granted.

Shortly afterwards negotiations were opened up with the *Norwich Union Life*. These matured into a scheme which was laid before Parl. and received its sanction and authority by means of 29 & 30 Vict., c. cxxv. The terms of arrangement, as embodied in this Act, are as follows :

It is recited that the profits of the *Amicable* did not admit of the payment of £250 on every share; that the amount of each share under the charter-policies had on the average of 25 years subsequent to 1841 averaged £223 13s. 2d. Also that the system of the *Amicable* was orig. estab. 160 years ago, "as the first experiment in life assu., and therefore in the absence of all experience of the principles upon

which it ought to be conducted, it has been found impossible to adopt the peculiar system of the *Amicable* to the system upon which life ins. is now ordinarily conducted." It further recited that no policy-holder of the *Amicable* had a right to require the directors to undertake any new business of life assu.; that the assets were more than sufficient to meet the eventual liabilities. That the yearly expenses of the So. exceeded £3500. That the number of *Amicable* policy-holders was 994, insured for £1,146,900, of whom 894 ins. for £1,010,180, had approved proposed arrangement. Of the remaining 100 policy-holders, 86 had not dissented, 4 were neutral, and 7 dissentient. The agreement provided that the whole of the assets of the *Amicable* should be appropriated for meeting claims under *Amicable* policies, less only the sum of £1200 per ann. contributed towards management. The *Amicable* was not to undertake any new bus. The funds of the *Norwich* were to be liable for *Amicable* pols.; charter pols. being paid at £227 p. share. The *Norwich* So. to take over funds of the *Amicable*, which latter to be formally dissolved. Compensation of officers of *Amicable* provided for.

Adopting the language of Mr. Farren in the foregoing account of the *Amicable* So., it may be seen "by what gradual means the important system of pecuniary provision against the evils of premature death was being estab. Without observance of the distinction of age; without any definite notion as to the value of each nominee's expectant share of the mortuary dividend—yet an assembly of private individuals as early as 1705-6 considerably felt that if the general notions as to the tenure of life admitted of being acted on to provide an annuity for an individual himself, so pecuniary matters might be equally arranged to provide support for such members of his family as might eventually survive him." The So. so constituted lasted for 161 years. It was essentially a thing of the past; but its hist. cannot fail to be of interest to all succeeding generations.

AMICABLE SO., MORTALITY EXPERIENCE OF.—The mortality experience of this So. has been separately pub. on three distinct occasions, each of which we must pass under review. Under date 1st Dec., 1778, Mr. Charles Brand, the then registrar, compiled the experience of the So., giving the following as his reasons for so doing:

The variety of tables of observations on the bills of mort. for different places, and the different sums they gave when applied to value annuities from, first induced me to consider some method to take an actual duration of lives, from a register of experienced facts: I therefore applied myself to the books of the *Amicable* So. and extracted from thence the date of the admission of every member on whom a claim had been made, the age when admitted, and the day on which the member died. I likewise computed the time each member lived, and arranged them according to their respective ages, the totals and averages whereof have produced the result contained in the above table of durations.

The table of expectancy of life is formed by appropriating that share of life which each member would have enjoyed, had all the members of the succeeding ages been admitted, when at the given age; and had there been a greater number of instances in the earlier or later periods of life, I should not have combined them, but given them distinct and separate, according to their ages; yet I hope I have obtained such a number of facts as will give a foundation for fixing the value of annuities on the lives of those individuals who may be supposed "to have no disorder which may tend to the shortening of their days."

There are tables of observations on bills of mort. which have been communicated to the public by two very ingenious mathematicians, Dr. Halley and Mr. Simpson; the former gives a calculation, founded upon five years' observation on the bills of mort. for Breslau; the latter upon ten years' observations on the bills of mort. for Lond.; both authors being, however, very sensible how defective those bills were, they only gave them as the best from whence any conclusions could have then been drawn. We have likewise been favoured, in Monsieur de Buffon's Natural History, with tables formed from the observations of Monsieur du Pre de St. Maur, of the French Academy, and there pub. by his authority; they comprehended the observations on three parishes in Paris and twelve in the country; those combined give expectations of lives which to a fraction correspond with the above table, until the ages of 52, etc., and the difference then arises from the want of a sufficient number of instances to continue the usual decrements of life, which the nature of this institution would not admit of; but notwithstanding these corresponding circumstances, the tables of observations on bills of mort. ought to give an expectancy of life much less than a register of lives collected with care and attention. Because such bills must contain the deaths of those who were debilitated (in number not ascertained); when they give a greater, they are apparently defective, and therefore ought not to be too implicitly relied on.

Mr. de Moivre in his book on the *Doctrine of Chances*, strongly recommends a register to be taken of individuals, ascertaining their ages and occupations, in order to deduce from thence some more certain grounds to obviate those difficulties, which have but too justly been attributed to the imperfect and chimerical returns made as general bills of mort. Having in a great measure complied with his wish, by here giving the result of a register of 3826 persons who have been members of a public inst., I shall, as soon as other engagements will permit me, proceed to form a complete set of tables for the value of annuities, attending at the same time to that particular risque and contingency annexed to those in early life.

Here is Mr. Brand's Table of "Durations," which possesses great interest on account of its being the first "Experience" Table ever compiled.

A Table of the Duration of Lives in the corp. of the *Amicable* So. for a perpetual Assu. Office from the institution of the So. (in 1706) to the year 1777, both inclusive, being upwards of 72 years.

Age.	Duration.		Expectation.		Age.	Duration.		Expectation.	
	Years.	Deci. parts.	Yrs.	Deci. parts.		Years.	Deci. parts.	Yrs.	Deci. parts.
*12 to 22	15	'7022	31	'5941	31	15	'3369	27	'1325
23	15	'2310	31	'0481	32	14	'3315	26	'5861
24	14	'5424	30	'5134	33	13	'4383	26	'0763
25	11	'0383	29	'9974	34	15	'1917	25	'6029
26	12	'5424	29	'5898	35	15	'8246	25	'0556
27	14	'3561	29	'1397	36	16	'5397	24	'4752
28	12	'1150	28	'6325	37	14	'8876	23	'8530
29	14	'3178	28	'2021	38	13	'6493	23	'3013
30	15	'9671	27	'6980	39	13	'2849	22	'8093

* There being but few lives at these ages, it became necessary to combine them to form proper averages.

Age.	Duration.		Expectation.		Age.	Duration.		Expectation.	
	Years.	Deci. parts.	Yrs.	Deci. parts.		Years.	Deci. parts.	Yrs.	Deci. parts.
40	15	'9506	22	'3385	52	16	'4739	13	'6827
41	15	'5561	21	'7142	53	11	'9013	12	'1245
42	14	'8191	21	'0991	54	12	'8410	11	'1803
43	13	'5315	20	'5178	55	10	'8547	9	'6267
44	18	'1835	20	'0168	†56 to 60	8	'2585	8	'0128
*45	14	'5643	19	'1578	†62	6	'7671	6	'7671
46	15	'1808	18	'5406	†64				
47	15	'2821	17	'8461	†66				
48	13	'1452	17	'1052	†69				
49	15	'0410	16	'5422	†70				
50	15	'6657	15	'7298	†75				
51	15	'0767	14	'7390					

About 1811 Mr. John Pensam, the then registrar of the So., took out of its books such a statement concerning the lives ins. as to constitute, in some sort, a Life Table. That statement was never pub., but its compiler used it to test the experience of the So. against the *Northampton* Table. The result was in favour of the *Amicable* lives, which Mr. Pensam said he attributed *very much to the benefit of selection*. Not, however, to medical selection, of which the So. did not avail itself in the earlier part of its hist.

In 1841 Mr. Galloway, the then registrar of the So., for the "use of members," pub. its experience, and also furnished in detail the data on which it was based. The observations extended over a period of thirty-three years, from the reconstruction of the So. in 1808 to the 5th April, 1841. Three determinations of the law of mortality were included in these observations. The *first*, grounded on the duration of the lives of those members only who had been admitted into the So. since the beginning of 1808, upon insurances on single lives for the whole period of life. The *second*, on the duration of the lives of those members who, having been admitted in previous years, formed the old So., on the 5th April, 1808; and the *third*, on the combined data furnished by both classes.

The first of these determinations was prescribed by the So.'s 6th Charter, which directed that the ann. valuations required for ascertaining the amount of the dividend to be paid on claims, by the deaths of members, shall be made from a table of mort., deduced from the experience of the So. itself during a specified period of time; and the second and third were subsequently undertaken for the purpose of rendering the investigation complete, by including in it the total experience of the So. since 1808. Mr. Galloway says:

In collecting the materials for these tables great pains were taken to insure the most scrupulous accuracy. In the early part of the period over which the observation extends the office registers were not arranged with a view to the present investigation, and a large proportion of the members were assured in more than one policy, while the record of the second assu. did not always contain a reference to the first, much difficulty was experienced in ascertaining the exact number of persons who had stood the chances of life in the So. After repeated comparisons of different sets of books, and reference to the money accounts in all cases of discrepancy, a list, correct (I believe) in every respect, was at length prepared, containing the following particulars:—1. The name of each individual on whose life an assu. was effected for the first time; 2. His office age at admission; 3. The date of his admission; 4. The date of his death, or discontinuance, if not living, in the So. on the 5th April, 1841, which are all the data required for the construction of the tables. The ages at admission were certified by extracts from baptismal registers or by affidavits, and the dates were carefully checked. In estimating the relative value of the results brought out, the accuracy and certainty of the data may perhaps be regarded as compensating in some degree the smallness of their number.—*Intro.*

The question of persons, and not policies, being thus set at rest, the next point to notice is the method of reckoning the ages. The plan adopted was to consider that each member on admission had completed exactly the half of his current year; but a subsequent test showed each member to be about *two months* older than is assumed at admission, discontinuation, or death in the tables.

The data so obtained was arranged on the plan adopted by Mr. W. Morgan for the *Equitable* Experience. By this disposition of the materials (continues Mr. Galloway) a distinct and complete view is given of the duration of the lives, and of the assu. of each class separately, as well as of the whole taken collectively; in short, a separate determination of mortality is made for each age of admission, whereby considerable light is thrown on various questions having an important practical bearing on the general subject of life assu.; such, for example, as the effects of selection at the different ages. But he adds, "It is true that the materials from which the present table is constructed are much too scanty to allow of its indications being safely adopted for the solution of such questions."

Subsequent similar valuations were to be made every ten years, but we have no records of any others.

The number of members admitted between 5th April, 1808, and 5th April, 1841, was 3,530; of whom, 505 discontinued their policies, and 798 died, leaving 2,227 surviving at the last-named date. Of the members prior to 5th April, 1808, living after that date, there were 1,088; of whom, 994 died, 30 discontinued their policies, and 64 still survived

* When the So. was first instituted, and until the year 1732, the ages of those who became members were not limited (as they now are) to between 12 and 45; but many instances happened afterwards, by exchanging older for younger members, for those above the age of 45.

† There being but few lives of these ages, it became necessary to combine them to form proper averages.

in 1841. Thus a total of 4,618 lives—or deducting discontinued policies, 4,083 lives—were under observation, and 1792 deaths, including a few which have been reckoned twice, probably from being in both series.

Table showing the probabilities and mean duration of Life, resulting from the total experience of *Amicable* So. from 5th April, 1808, to 5th April, 1841.

Age.	No. who complete age opposite.	No. who die in their next year.	Annual Risk.	Mean duration of Life.	Age.	No. who complete age opposite.	No. who die in their next year.	Annual Risk.	Mean duration of Life.
24	10,000	41	0041	38.649	24				1.778
25	9959	43	0043	37.805	25				1.254
26	9916	46	0046	36.968	26				0.749
27	9870	48	0049	36.137	27				0.264
28	9822	51	0052	35.312	28				0.797
29	9771	53	0055	34.493	29				0.349
30	9718	57	0058	33.681	30				0.920
31	9661	59	0062	32.875	31				0.508
32	9602	63	0065	32.076	32				0.113
33	9539	66	0069	31.284	33				0.733
34	9473	70	0074	30.499	34				0.367
35	9403	73	0078	29.721	35				0.014
36	9330	77	0083	28.950	36				0.673
37	9253	81	0087	28.187	37				0.345
38	9172	85	0093	27.431	38				0.029
39	9087	89	0098	26.684	39				0.725
40	8998	94	0104	25.944	40				0.433
41	8904	98	0110	25.212	41				0.153
42	8806	104	0117	24.488	42				0.884
43	8702	108	0124	23.772	43				0.626
44	8594	112	0132	23.064	44				0.379
45	8482	119	0140	22.365	45				0.142
46	8363	123	0148	21.674	46				0.915
47	8240	129	0157	20.991	47				0.697
48	8111	135	0166	20.317	48				0.487
49	7976	140	0176	19.651	49				0.284
50	7836	146	0187	18.994	50				0.088
51	7690	152	0197	18.345	51				0.896
52	7538	158	0209	17.704	52				0.706
53	7380	163	0222	17.072	53				0.514
54	7217	170	0235	16.448	54				0.314
55	6047	176	0249	15.832	55				0.096
56	6871	181	0264	15.223	56				0.843
57	6690	188	0281	14.622	57				0.515
58	6502	195	0300	14.030	58				0.125
59	6307	202	0321	13.449	59				0.750
60	6105	211	0345	12.878	60				0.500
61	5894	220	0373	12.320					

The following table shows the mean durations of life at every fifth year of age from 25 to 95, according to *Amicable* So.'s experience and other tables :

Age.	Members admitted since 1808.	Old Members.	These Combined.	Equitable Experience.	Government Male Annuitants.
25	38.8	.	37.8	38.1	35.9
30	34.7	.	33.7	34.5	33.2
35	30.8	.	29.7	30.9	30.2
40	27.0	.	25.9	27.4	27.0
45	23.4	21.6	22.4	23.9	23.8
50	19.8	18.2	19.0	20.4	20.3
55	16.4	15.2	15.8	17.0	17.2
60	13.4	12.5	12.9	13.9	14.4
65	10.6	10.1	10.3	11.1	11.6
70	8.2	8.0	8.1	8.7	9.2
75	6.3	6.3	6.3	6.6	7.1
80	5.0	4.8	4.9	4.8	4.9
85	.	3.7	3.7	3.4	3.1
90	.	2.7	2.7	2.6	2.0
95	.	1.5	1.5	1.1	1.2

The *Amicable* thus indicated a less mortality than the *Equitable* from 25 to 40; and both agree in giving a more favourable view of the chances of life at those ages than even the *Carlisle* Table or the Government male annuitants. From 45 to 60, the chances of living over five years are less by the *Amicable* Table than the *Equitable*, but the difference is inconsiderable. Above 60, the mort. in the *Amicable* increases rapidly in comparison with that in the *Equitable*; and at 65 and all the higher ages it gives the chances of living over five years less than the *Northampton* Table.

With respect to the series of old members, the circumstances were considerably different, and the rate of mortality differed accordingly. Of the 1,088 lives of which the series is composed, more than half were above the age of 57 when the observation commenced in 1808; and as the limiting age of admission into the So. previous to that year was 46, it followed that more than half had lived in the So. upwards of 11 years, so that they could not be regarded as belonging to the class of selected lives. Besides, the members were not, as in the other series, continually recruited by fresh admissions, no new member having been added to the original list. A comparatively high rate of mort. was therefore to be anticipated from the exp. of this class alone: and such turned out to be the result.

The mortality of the new series will be found to coincide very closely with the mean duration of male life in France, as shown by M. Demonferrand's Tables.

It may be stated generally that the principal feature of distinction between the *Amicable* and *Equitable* Tables is the greater mort. indicated by the former at the higher ages, particularly between 65 and 80. In point of absolute value, the experience of the *Amicable* So. is undoubtedly much inferior to that of the *Equitable*. The number of deaths in the *Equitable* Table is 5,144, while the number in the *Amicable* Combined Table is 1792.—*Galloway*.

Almost all the members of the *Amicable* were males, and the great majority appear to have been inhabitants of Lond. The ages of admissions of the members of the new series was as follows:

Under 21	...	...	...	...	...	37
From 20 to 30	...	...	...	...	...	597
„ 30 to 40	...	...	...	...	...	1261
„ 40 to 50	...	...	...	...	...	945
„ 50 to 60	...	...	...	...	...	498
Above 60	...	...	...	...	...	192
						<hr/> 3,530

This review of its mort. exp. appropriately completes our hist. of the *Amicable* Corp.

AMICABLE SO. FOR MARRIAGE, in Bell Court, Bow Churchyard, founded in 1710, for Birth, Marriage, and Service Ins. We give some details of this office under MARRIAGE INS. There appears to have been another *Amicable* So. for Marriages held at Mr. Gray's, Swan Yard.

AMICABLE SO. kept at the Sun and Cross Keys, in Wich St., founded in 1709, as a branch of the *Taylor's Friendly So. for Ins. upon the Lives of Men, Women, and Children*. We shall give further details concerning it in HIST. OF LIFE INS.

AMICABLE SO. OF ANNUITANTS.—This So. was founded in Westminster in 1769, for the purpose of securing to its members an annuity of £26 on arriving at the age of 50. It was one of many sos. of a similar class, founded about the same period. The rate of contribution required from the members was generally inadequate to the benefits promised; and the sos. died out generally about the period when, if properly constituted, they would have been of service to the members. This particular So. continued in operation for some years. The following advertisement was issued by its managers in May, 1777, and has at least one remarkable feature:

Amicable So. of Annuity for the Benefit of Age, estab. Christmas, 1769. The directors of this So. meet this day, and the first Monday in every month, at the Feathers Tavern, near St. Clement's Church, in the Strand, from 7 to 9 in the evening, for the admission of members of either sex *being Protestants*. Conditions: Any person may subscribe for one, two, three, or four shares, and when 50 years of age will be entitled to an annuity of £26, £52, £78, or £104 per ann. during life, or such sum as the fund of the So. will admit, except such as become members at upwards of 40 years of age, who must continue members for ten years before they are entitled to the said annuities. Also may be admitted without admission money, paying quarterly payments in proportion. Persons may be admitted from 50 to 54 inclusive to receive the said annuity at 9 years; from 55 to 59 inclusive, to receive it at 8 years; from 60 and upwards at 7 years. Abstracts may be had at the above tavern, and at the Bank Coffee-house. The Deed of Sett. of this So. is enrolled in the High Court of Chancery.

The ultimate fate of the Co. we cannot trace.

AMICABLE SO. OF MASTER BAKERS.—This So. was founded under articles of agreement dated 25th June, 1798. Its object was to raise an annuity fund by means of annual subscriptions, etc. Every subscriber, who should have been a member seven years, and attained the age of 60 years, was to be entitled to a clear annuity of £60 for life, and the widow of every such annuitant to an annuity of £30, or in certain cases, £60 for her life, if she continued a widow. The So. afterwards became involved in litigation, and its affairs came before Lord Chancellor Eldon in the case of *Pearce v. Piper*.

As the hist. of this So. is but too illustrative of that of many other sos. of that period, we add the following details concerning it :

The articles provided for payment of ann. subs., etc., that a member who continued a year in arrear should forfeit the money paid ; lose all claim on the fund ; and cease to be a member of the So. : that no member should become entitled to any efficient benefit from the So. until he had been a member seven years ; had completed his seven years subs. ; and had attained the age of 60 years. The art. further provided for the appointment of a board of directors, with power to call extraordinary general meetings, as they should see occasion ; providing further, that any twelve or more members should have power to convene an extraordinary general meeting in the manner specified.

The art. then, pointing out the mode in which the fund arising from the subs. and fines should accumulate during seven years, directed that at the end of seven years the clear cap. should be valued and ascertained ; and the subsequent subs. and ann. produce thereof should be applied in discharge of the current expenses and annuities due or to become due ; and that every subs. who should have been a member seven years, and should then have attained the age of 60 years, should be entitled to a clear annu. of £60 for life ; and the widow of every such annuitant to an annuity of £30, or in certain cases of £60 for her life, if she continued a widow. In case of several annu. falling due about the same time, some might be deferred for a period not exceeding three months.

If at the end of seven years the funds and income therefrom were insufficient to meet annuities and other outgoings, subs. might be raised to members and annuitants (with exception in favour of any annuitants who had become *blind*).

On 31st July, 1806, a resolution was adopted by the directors on the report of a committee, to the effect that the So. could no longer exist, and recommending that it be dissolved, and every member be paid his principal and int. Some annuitants appealed, *on the ground that if the funds and income were insufficient for the purposes of the So., the subs. must be raised and funds provided*. The directors answered that the orig. tables of the So. were founded in error and could not support the promised annuities. Only 20 out of 122 members present at the meeting had objected to dissolution of So. The directors acted upon the opinion of Mr. W. Morgan and Mr. Fairman (author of a work on the *Public Funds*).

After a good deal of litigation, the Court of Chancery ultimately directed inquiries as follows :
1. To ascertain the state of the So., defect of plan, etc. ; 2. To provide a remedy, viz., by add. subs. adequate to the objects ; by paying the arrears, and providing for the present and future annuities.

It seems clear that the intention of the majority of the members was, at the end of the seven years, to dissolve the So. and obtain repayment of their money ; and in that way to defeat the rights of those who had become entitled to their annu. This proceeding the Court properly frustrated.

AMICUS CURIAE (Lat. *friend to the Court*), a stander by, who informs the Court when doubtful or mistaken of any fact or decided case.

AMITY LIFE.—This Co. was projected in 1853 by two solicitors, who did not proceed with the enterprise in the spirit indicated in its title, and so the Co. came to grief.

AMSTERDAM.—We propose to note briefly the ins. incidents connected with this, as with other continental cities. It must not be understood that we purpose to attempt a complete hist. of the progress of ins. in them. It may rather be considered that we mention (as a rule) such incidents as arise out of, elucidate, or tend to complete the hist. of ins. in our own country.

We shall pursue the chronological arrangement, mentioning any very special incidents under a separate heading. Thus an important Marine ordin. was promulgated from here in 1598. This will be spoken of in conjunction with later ordin. under **AMSTERDAM, INS. ORDIN.** ; and much light will be thrown upon the various branches of the ins. practised in Northern Europe at an early date.

Several important improvements made in fire-engines have originated in this city. The two Dutchmen, Van der Heide, who were inspectors of the apparatus for extinguishing fires here, invented about the year 1672 hose for fire-engines, which up to that time had been unknown. They used leather for its manufacture. The introduction of hose led naturally to many improvements in fire-engines, in which these same men were prominent. They adapted their engines to the use of *suction hose*, which in many respects was even of more importance than the use of hose in the ejection of the water ; although the last, by enabling the engines to be stood in positions of safety, was of very great practical advantage. [**FIRE-ENGINES, HIST. OF.**]

Beckmann (*Hist. of Inventions*) relates how at the fire of the Stadthouse, in 1652, the old engines then in use were of very little service. The city lost by ten conflagrations, while the old apparatus was in use, 1,024,130 florins ; but in the following five years, after the introduction of the new engines, the loss occasioned by forty fires was only 18,355 florins.

These new engines were made with the improvements of the Van der Heides, who had in 1677, five years after they had first tried experiments, obtained an exclusive privilege to make these engines for a period of 25 years. In 1682, their engines being sufficiently distributed throughout the city, the old ones were laid aside.

In 1695 there were 60 of these engines in the city, the nearest six of which were to attend each fire. In the course of a few years they were common in all the towns of the Netherlands.

The following is an authentic outline of the regulations in force in 1715, for the safety of the city in cases of fire. They were communicated for the information of residents in Lond., after a serious fire in the last-named city about that date.

1. The law positively forbids all crowding to the place ; nobody that is not a neighbouring inhabitant dares enter the street where a fire is broke out, for he would immediately be clapt in jail.
2. A sufficient number of men are listed, who are obliged to serve at extinguishing fires (the porters,

for example); these are under the most *exact* regulation and discipline. They are disposed into classes, and each class is governed by a master, who is authorized by the magistrate. The masters are settled inhabitants at different parts of the city, and have each a list of the names and habitations of the men that are under him. The masters are bound to appear at the first notice of a fire, and the men upon the same notice are bound to attend upon their masters. Every man possesses a brass ticket, which he brings with him and delivers to his master, which is a token of his appearance, and entitles him to a reward of half-a-crown or more, according to the service he has performed. He that does not appear, or he that departs without leave of the master, is fined or otherwise punished; and disobedience or neglect is severely punished. And in short, the men are under the same discipline as soldiers, and like soldiers too are exercised, and taught how to work an engine, and to do all other the services that are necessary in suppressing fires. All these men wear painted hats; that is, thick felts painted all over with red, blue, green, yellow, etc., to distinguish the class they are of.

3. Engines are placed in all parts of the town locked up in little houses made for them; the keys whereof are kept by the master, who is obliged to take care to keep the engines in good order. The buckets are hung up in the citizens' houses in convenient number and at convenient distances, and at every such house the picture of a bucket is set upon the wall. And long poles with large hooks to them, ladders, and ropes, and other necessities, are kept in the churches to be made use of as occasion offers.

4. To encourage alacrity, a reward of £10 is given to the men that bring in the first engine, £5 to the second, and half that sum to the third. And lastly, the magistrates afford all possible assistance in supporting the authority of the masters of the firemen. By these methods we are protected from the rage of fire; and why the same methods should not preserve you too, I cannot see. Thus much I am sure of, that by order and discipline the greatest works may be performed; but from confusion and irregularity no good effects can arise.—*Amst. Jan. 31, 1715.*

The mania for new projects, especially of Ins. Cos., which had been so prevalent in England during 1720, and for several years preceding, extended itself to Holland. We find from a cotemporary authority, under date Amsterdam, 26th July, 1720, the following:

We are a little alarm'd at the daily multiplication of new projects among us. We are now beginning one here of a nature very particular, and its circumstances surprising. The subs. is to be extremely great; but as nothing is paid down at first but half a florin, it is not to be doubted but that the subs. will be quickly fill'd, tho' it be for no less than 100 millions. The contriver or undertaker of this is said to be an Englishman; the gentlemen of that nation being, it seems, at present more fam'd for projecting than any other. We do not, however, know what measures they intend to take for the carrying on a design of this magnitude till they make known their scheme; *but it is to be call'd* (as they all are) *a Co. of Ins.*

The bill of mort. for Amsterdam shows the deaths for the nine years 1728 to 1736, both inclusive, to have been as follows:

Years.	1728	1729	1730	1731	1732	1733	1734	1735	1736.
Numbers.	11,164	9,618	8,912	8,383	7,332	10,691	7,764	6,533	9,206.
Average, 8,844.									

The number of burials in this city in 1740 was 10,056 persons, being 2,500 more than in the preceding year. The ships which came into Amsterdam in the same year were 1,645, being 168 fewer than in 1738. In 1742 there arrived 1,591 ships. In this same year (1742) Kerseboom pub. in this city a fol. vol. containing a mort. table deduced from the registers of annuitants in Holland and West Friesland. [KERSEBOOM'S TABLE OF MORT.]

A So. was founded in Amsterdam about 1765 for granting annu. on survivorship. Thus, if a life aged 20 desired to secure an annu. provided it survived another person aged 60, this So. promised for the ann. payment of 110 florins the following benefits: If the oldest life failed in the first year after admission, an annu. of 100 florins; if in the 2nd year, 200; if in the 3rd year, 300; if in the 4th year, 400; if in the 5th, or any subsequent year, 500 florins. This So. opened an agency in Lond., and hence the attention of Dr. Price was drawn to it. In the first edition of his *Obs. on Reversionary Payments* (1771), after reviewing the scheme of this So., he says:

It is, therefore, evident that the scheme of this So. is in this instance grossly defective. There are other instances in which it is even more defective; and the whole of it, like the schemes of most of the Lond. Sos., appears to have been contrived by persons who had no principles to go upon. And yet it has been much encouraged. Many have entered themselves into it from different parts of Europe; and the printed plan acquaints us, that it is now in possession of an ann. income of 200,000 florins. What disappointment then must it in time produce? . . . Mr. Cadell can procure from his correspondents in Holland any information for those who may want to know more of this So. But indeed I should be sorry to find it much enquired after in Lond.

In his 4th ed., 1783, Dr. Price says: "This So. was so wretched a deception that it was impossible it should long stand its ground; and I am told it now exists no more."

Beawes, an English writer on M. Ins. matters in the middle of the last century, says:

It is generally believed, and by many affirmed, that more ins. are made at Amsterdam than with us, or indeed in any other port in the world; their extensive commerce by sea, and the extraordinary number of vessels continually sailing from thence, naturally occasions many to follow the practice of ins.; but what has yet augmented this business and multiplied the policies of ins. almost to infinity, has been that honour and integrity with which their underwriters were formerly characterized, as their policies were then only subscribed by men of large fortunes.

It is certain that the heavy duties on M. Ins. inflicted in Gt. Brit. did for a time drive much of the business into Holland. [MARINE INS., HIST. OF.]

The pop. of this city has not shown the steady progress incident to many cities:

In 1622, on the authority of Struyck, it was	...	104,961.
„ 1753, on the same authority after investigation	...	200,000.
„ 1777, on the authority of Quetelet	...	241,353.
„ 1787, on the authority of Lobatto	...	224,862.
„ 1826, on the same authority	...	200,784.
„ 1830, on the authority of Quetelet	...	202,175.

These are mostly estimates based upon calculations of the number of deaths at those periods. For half a century or more there appears to have been a steady decrease.—*Milne, Ency. Brit.*

In 1830 Herr Lobatto pub. a work on Life Ins. containing a table of mort. for the city of Amsterdam. The deaths in the city in the earlier part of the present century were said to be 1 in 22 of the pop.

In every serious case of fire now, the police and military are in attendance, to act in conjunction with the chief fire-master.

AMSTERDAM, INS. ORDINANCES OF.—The first ordin. relating to affairs of Ins. in this city was promulgated in 1598. This was very soon after the city began to take a position of importance, and while the Netherlands were yet in subjugation to Spain. We refer to this fact to account for certain resemblances between this early ordin. and the *Consolato del Mare*. Subsequent ordinances were promulgated in 1673, 1744, 1756, and 1776, respectively. These ordin. are called by nearly all writers *Marine Ordin.*: no doubt because, in the main, they were designed for the regulation of Marine Ins.; but this was not to the exclusion of other branches of ins.: hence we prefer to call this and the other similar ordinances we shall have to deal with in these pages—many of them of much earlier date than the present—"Ins. Ordinances." The parts of the ordin. of 1598 relating to other branches of ins. than marine will be noticed more in detail under their appropriate heads. The following is a brief summary of its provisions as to Marine Ins., which were very ample, and implied long familiarity with the practice:

Ins. to be 10 p.c. under value of goods shipped. If over 2000 livres, all beyond that may be covered, but one-tenth of the 2000 to be always at risk of insured. Ship's name, captain's name, name of loading port and destination, to be inserted in pol., etc. If in either port of destination or port from which vessel sailed no news be heard of ship or merchandize for one year and one day from date of ins.—if destined for places in Europe and Barbary—goods to be held for lost, and claims to be paid in three months. As to other places more remote, the time to be observed, two years. Ins. for Europe and Barbary made three months after ship sailed, and for more remote places, six months after, to be null and void, unless notice be properly given to insurer [of the date of sailing?]. Captain not to enter into any other port or change the voyage, only according to pol., on penalty of nullity, unless required by necessity. Then follow provisions as to detention of ships by rulers of foreign countries, and what is to be done in cases of undue detention and consequent damage of cargo, etc. Ins. on ship artillery or munitions of war not to exceed two-thirds value. No ins. whatever to be made on freight or equipage, nor on powder, bullets, victuals and the like which are consumed in any way. Captain or crew not to ins. wages or effects, except merchandize, in case they have any beyond what they receive for their wages. An action in average ought to be entered within 1½ years, if the average occurred within limits of Europe or Barbary, and three years if beyond said limits, from the time the ships have been entirely unladen. In case of loss, claims arising in any other manner, actions to be entered within similar terms—time to commence from epoch when accident happened.

As to merchandize going or coming by land or rivers, it is to be regulated in the way the merchants find best in contracting. The proprietor himself, however, must run the risk of one-tenth of the value. Carriers not to do ins., nor to ins. their carriages and horses, except for half their value, and their wages not at all. Those who ins. on things liable to corruption, or on munitions of war, or silver, coined or not, to have the same mentioned in pol., otherwise ins. null.

The parties contracting ins. to pass them in presence of judges, notaries, or other public persons either by proper and particular pol. schedules, signatures, or obligations, signed by the persons bound, or by witnesses worthy of faith, in the way the parties think proper. All pols. to be made out conformable to this ordin. Ins. might be made upon "good or bad news," etc. *No ins. henceforward to be made on the life of persons, nor on any wager of voyage, and similar inventions.* If made to be null. [LIFE INS., HIST. OF.]

The Ordin. of 1673 presented no new feature, and therefore we need not dwell upon it. We thus reach that of 1744, which is called, *Ordin. of Ins. and Averages of the City of Amsterdam, for the year 1744*, and which commences as follows:

Whereas the worshipful gentlemen of the judicature of the city of *Amsterdam* have experienced that since the pub. of the statutes or ordin. of ins. and averages, and the amplifications thereof, many alterations have from time to time happened in trade; whence sundry matters and articles require to be altered, explained, or amended: therefore the said gentlemen, after advice taken concerning trade, ins. and averages, and on the information of many eminent merchants and underwriters, have thought proper, by virtue of the privileges of this city, and of the letters of grant, approbation, and confirmation granted *ex abundanti* by their high mightinesses to the said city on the 17th July, 1612, *to confirm, enlarge, and explain* the aforesaid ordin. and the amplifications thereof; and further, to ordain, enact, and institute, as by these presents is ordained, enacted, and instituted, that in matters of ins. and averages henceforth shall be observed and regarded what here follows.

Then commences "Article the first," which reads:

It is ordered that all stipulations or conditions inserted in any pols. of assu. which are contrary to this ordin. shall be deemed void, and of no value, notwithstanding the contracting parties shall renounce all benefit from this ordinance.

As we cannot follow in detail, or in any useful form, the entire 61st sec. of this ordin., we must content ourselves with noticing a few of its main provisions; and as we propose to place before our readers the various forms of policies issued and used in conformity with this ordin., we think its scope and purport will be made clear without any waste of space.

The first remarkable provision is in Art. 8, which provides that underwriters upon the hull of a ship built of FIR-WOOD shall only be liable to pay half the loss, unless the fact of such wood being employed is named in the policy. We next reach the subject of TRANSPORT INS.—a branch of ins. bus. almost unknown in this little island of ours,

but much practised on the continent of Europe, and in the U. S., where the distances traversed are very considerable. Here is the sec. :

IX. Ins. on goods, wares, and merchandizes, moneys, gold, silver, jewels, pearls, and other precious stones, *going or coming by land*, or over fresh waters (whereof hereafter, under No. V. a form of pol. is found), may be regulated by the parties in manner as they amongst them can agree, provided it be not contrary to this ordinance. [TRANSPORT INS.]

The form of pol. here referred to is the following :

TRANSPORT INS. POLICY.—We the underwritten do ins. you, . . . or whom else it may concern, wholly or partly, friend or foe, none excepted, viz., each for the sum by us here underwritten, from . . . on . . . already sent or to be sent, with the riding post, or . . . embalmed, or packed in such packet, case, sack, or box, marked and numbered as follows: . . . to . . . already laden, or yet to be laden, in the ship . . . navigating from . . . embalmed or packed in such pack, case, or cask, marked and numbered as follows: . . . whereof we by these take the risk for our account, to run from the hour and day that the said ins. goods shall be delivered and brought to the post office, waggon, ship, or other places where it is usual to receive the said goods for the insured design, and that be made to appear to us; and shall continue till what is insured shall be as above arrived at . . . and freely and peaceably, without any loss or damage, delivered in the possession of the insured, his factor, or to whom it is consigned. And the ins. shall need to exhibit no further nor other proof of property or value than only this bare pol., with which we, in case of average, or damage, entirely shall be satisfied, although the wares ins. might be worth, or had cost less or more, as the same were by agreement, and to the satisfaction of both sides, particularly taxed and valued at the sum of . . . which, in case of any accident, shall serve as a rule; and in all events or accidents, such other roads, vehicles, and vessels may be used and employed to forward the voyage, as, according to circumstances of time, by the ins. or any others, shall be judged proper, for the greater benefit and security of the goods ins.: authorizing them thereto specially by these presents; as also to lend a hand to the saving and benefiting of the said goods, to sell them and to distribute the moneys in case of necessity without asking our consent; we shall also pay the charges incurred on that account, moreover the damage fallen thereon, whether anything be saved or not; and belief shall be given to the account of charges on the oath of him who shall have taken the same, without alleging anything against it; the said risk consisting of all the perils by water, and by land, tempests, fire and wind, arrests by friends and enemies, detentions by kings, queens, princes, lords, and republics, letters of mart and contramart, villanies, and negligence of the postillions, servants of the office, writers, sailors, waggoners, innkeepers, billets of lodging, parties, robbers and thieves, and all other perils and adventures, which anyways might befall the said goods, heard of and unheard of, usual and unusual, none excepted; putting us, in all such cases, in the place of the ins., to indemnify him for all loss and damage, which he shall have suffered, each in proportion to his sum underwritten, the first as well as the last insurer, to pay within three months after we shall have received the notice of the loss or damage to the insured, or to his attorney, without any deduction; provided in ready cash be paid us for the consideration of this ins. . . . *per hundred*, under obligation and submission of our persons and goods present and to come; renouncing as persons of honour all cavils and exceptions contrary to these presents: reciprocally submitting all differences which might arise concerning the damages and prems. to the decision of the Chamber of Ins. and averages of this city; choosing in case of our dwelling out of the jurisdiction of the same, for *Domicilium citandi et executandi*, the house of the sec. of the said Chamber for the time being. Done at Amsterdam, etc.

It was under this form of pol. that the large consignments of diamonds to and from England, and to and from other parts of the world, all going by the "Mail," were ins.; and "valued pol." were used, in this case properly enough, because it would be impossible to agree upon any value after actual loss. By *valued pol.* is meant that a valuation of the actual sum to be paid, in the event of loss, was agreed upon at the time of ins.

Then we arrive at the following somewhat remarkable sections :

XI. It shall also be lawful to make ins. on ships, goods, wares, and merchandizes, which are sunk, spoiled, robbed, taken, or arrested, even after such misfortune has happened, if no knowledge thereof is come to the principal, who causes the same to be ins. at the time of giving of the last order, or to him who gives order for making the ins. or to the correspondent, broker, or others who have procured the said ins. at the time of making it.

XII. But when the ship or goods have been so long sunk, robbed, spoiled, taken, or arrested, that the knowledge thereof could have come to the person who maketh the ins. either by sea or by land, *reckoning three miles to two hours*, in such the ins. shall be held of no value, except the insured, and also those who procured the ins. for him, declared upon oath that they were ignorant of the damage and loss at the making of the ins. [GOOD OR BAD NEWS.]

Again :

XIII. The masters, pilots, sailors, warlike people, and all others who navigate the said ships, shall not cause their hire or wages to be ins., but their *ransom from pirates*, and the merchandizes they take along with them they may ins. *No ins. shall be made on wagers of voyages, and other such like inventions*; and no judgment shall be given on them [by the Chamber of Ins.] . . .

XIV. In ins. on the *bodies of masters, mariners, and passengers, against infidels and other pirates*, the underwriters shall be obliged to pay the sum they have underwritten, as soon as the bills of exchange drawn for the payment of the ransom are accepted; or sooner if it appears that the person ransomed *has arrived on Christian ground*: but with this proviso, that the full sum ins. for the ransom be laid out, and in case the person was ransomed for less, that the overplus be returned. [CAPTIVITY, INS. AGAINST.]

The form of policy appended to the ordinance for the last-named class of insurance is as follows :

RANSOM ON CAPTIVITY POLICY.—We, the underwritten, do ins. you, . . . or whom it else may concern, viz., each for the sum by us here underwritten, from . . . to touch everywhere, and all round, and at all places and lands, during the whole voyage, to sail and resail forwards and backwards, also to lie, lade, and relade, at the master's and factor's pleasure, either with or without the knowledge of the insured, or factor, *on the body of the person of* . . . navigating as . . . on the ship (which God preserve) called . . . whereof the master is . . . And if the said ship happen to be lost, or shall not proceed on the voyage, then we shall continue to run the risk on such other ship or

ships as the said . . . shall be embarked on, to accomplish the aforesaid voyage, either by water or by land; and we shall run the risk of being taken by any nation whatsoever, either *Turkish, Moorish, Barbarian*, or other infidel pirates, by which the said . . . may be taken, made captive, carried away, or ransomed: that in case this happen we will pay each punctually our full underwritten sum *for his redemption, or ransom-money*, with the further charges accrued thereon, to the insured or the bearer of these presents, without any deduction, as soon as advice is come here, and it shall appear to us that he is redeemed, or that the money is drawn, and the bills of exchange shall be accepted; or sooner in case it shall appear that the redeemed person is arrived on Christian ground; provided nevertheless that what the ransom might have cost less shall be returned to the insurers; so that the money of our underwriting shall only serve for his ransom and redemption, and all dependencies of the same, and no further. For the accomplishing of what is aforesaid, we bind our persons and goods present and to come; reciprocally submitting all differences as well concerning damages as premiums to the decision of the Chamber of Ins. and averages of this city; choosing in case of our dwelling out of the jurisdiction of the same for *Domicilium citandi et executandi*, the habitation of the sec. of the said Chamber for the time being: all in good faith, without fraud or deceit; and we have received for the premium . . . Done at *Amsterdam*, etc.

This branch of Ins. we shall treat of at large under CAPTIVITY INS.

Regarding Fire Ins. the ordin. is very brief:

XVIII. Ins. against fire on rope-yards, sugar-houses, still-houses, mills and other edifices, effects, and utensils thereto belonging, as well in this country as abroad; as also on houses and warehouses, shall be permitted to be made by policy for one year. [FIRE INS. HIST. OF.]

The following is the form of pol. provided under this sec.:

FIRE POLICY.—We, the underwritten, do ins. you, . . . or whom else it may concern, wholly or partly, friend or foe, viz., each for the sum here by us underwritten, on the structure, building, etc., called the . . . standing and situated . . . with the house and utensils, moreover the household furniture, goods, wares and merchandizes of whatsoever quality or nature they may be, none excepted, as already are in, or on the aforesaid . . . or during the whole space of this ins. shall be brought therein (and the insured shall be at liberty at any time to house so many goods, and to deliver them out again as he shall please), against fire and all danger of fire; moreover against all damage which on account of fire may happen either by tempest, fire, wind, own fire, negligence and fault of own servants, or of neighbours, whether those nearest, or further off; all external accidents and misfortunes, thought of and not thought of, in what manner soever the damage by fire might happen; for the space of twelve months, commencing with the . . . and ending the . . . both at twelve of the clock at noon: valuing specially and voluntarily the said structure, building, house, etc., with all its utensils and household furniture at the sum of . . . and the goods, wares, and merchandizes at the sum of . . . and thus together at the sum of . . . *and it shall not prejudice whether all this be worth, or has cost, more or less.* And the insured, or whom else it may concern, in case of damage or hurt, *shall need to give no proof nor account of the value, as we know it is impossible to be done*; but the producing this pol. shall suffice. And in case it should happen that the said structure, building, house, utensils and household furniture, and the goods, wares, and merchandizes, the whole, or part, are burnt or suffer damage on that account, we do hereby promise punctually to pay and satisfy without any exception, within the space of three months after the fire shall have happened, due notice having been given to us, each his whole sum underwritten, or else in proportion to the damages suffered, without deduction. Provided that in case of a partial loss all that shall be found to be saved and preserved shall be deducted, after the deduction of the charges paid for the saving and preserving; and concerning which the insured shall be believed on his oath, without our alleging anything against it, provided there be paid to us in ready cash, for the consideration of this ins. . . . *per hundred*, under obligation and submission of our persons and goods present and to come, renouncing as persons of honour all cavils and exceptions contrary to these presents; reciprocally submitting all differences as well concerning the damages as premiums to the decision of the Chamber of Ins. and averages in this city; and choosing in case of our dwelling without the jurisdiction of the said city, for *Domicilium citandi et executandi*, the habitation of the sec. of the said Chamber for the time being. Done at *Amsterdam*, etc.

Under such a policy now-a-days they would be *done* at Amsterdam, etc. ! Anything better calculated to promote fraud it would be impossible to conceive. The policy is clearly founded upon the principle of “valued policies,” well understood in Marine Ins. (although even there often employed for fraudulent purposes), but totally inapplicable to Fire Ins. [VALUED POLICIES.]

Sec. xix. of the ordin. relates to the Ins. of Bottomry Bonds, and would open up, if fully discussed here, many considerations which will develop themselves as we proceed. It will suffice, for the moment, to say, that for centuries the ecclesiastics launched their anathemas against the lending of money for gain: which they designated as the “high crime of usury.” The Jews (most prob.) devised a system of loan into which the element of marine risk entered, and lifted the transaction out of the prohibitions of usury: this by means of BOTTOMRY BONDS,—an early form of Marine Ins., which we shall discuss very fully under its proper head. The Hollanders—who have for generations been adepts at every species of financial speculation ever devised by man—finally circumvented the ecclesiastics by adopting the plan of ins. the money advanced on Bottomry. We must now pass on. [BOTTOMRY.]

The following clauses show how completely the bus. of ins. was intended to be brought under the control of the Chamber of Ins.:

LIX. No book-printers, booksellers, or other persons in this city shall be permitted to print or sell policies without stamps, on penalty of 300 gilders.

LX. No insurers or insured shall underwrite, or cause to be underwrote, but on pol. furnished with a proper stamp, and signed by the sec. of the Chamber of Ins., who shall have three stivers for the same; on penalty of 300 gilders, over and above the penalty enacted by the general edict and ordin. concerning the small stamps against the defrauders of the public revenue.

The form of Marine Ins. pol. provided was as follows:

MARINE POLICY (SHIP).—We, underwritten, do assure you, . . . or whom it else may concern, wholly or partly, friend or foe, none excepted, viz., each for the sum here by us underwritten, from

... on ... the hull or body of the ship, which God preserve, with all her guns, ammunition, utensils, and appurtenances of the same, belonging to the said ... or anybody else, called ... whereof the master is ... or who in his stead as master or masters may navigate, ... of which we hereby take the risks, perils, and adventures, to run for our account, from the hour and day that the said ship has made a *beginning to lade* merchandize, or shall have *taken on board the ballast* for the said voyage, and *end 21 days after* the said ship shall be *arrived* at the last destined place of unloading, or so much sooner as she shall be *entirely unladed*. The said ship shall be permitted to sail forwards and backwards, to turn and wind to the right, left, and to all sides, as the master or masters shall please and think proper for the service and benefit of the said voyage. The afore-mentioned dangers, consisting of all perils at sea, stress of weather, fire, and wind, arrests by friends and enemies, detentions by kings and queens, princes, lords, and republics, letters of mart and contra-mart, *carelessness of masters and sailors*, villanies of the said sailors, and all other perils and adventures which anywise may happen to the ship without means of the insured, thought of or not thought of: putting ourselves in all such cases in your place, to pay to you the insured, or your factor, all the damage which you shall have suffered, viz., each in proportion to the sum he shall have underwrote, the first as well as the last insurer, within *three months after we shall have notice given us of the loss or damage*. And in such case we do grant you the insured, and all others, full power to lend a hand as well to our loss as to our benefit, in saving and benefiting of the said ship ... and the appurtenances of the same; also to sell the same and to distribute the money, in case the master doth require it, without asking our consent or leave: and we shall also pay the charges attending the same, besides the damages fallen thereon, *whether anything be saved or not*: and faith shall be given to the account of the charges on the oath of him who has taken the same without alleging anything against it: provided in ready cash be paid us for the consideration of the ins. ... p. hundred under obligation and submission of our persons and goods present and to come, renouncing as persons of honour all cavils and exceptions that may be contrary to these presents; *reciprocally submitting all differences which may arise* concerning damage and premiums to the decision of the Chamber of Ins., choosing in case of our dwelling beyond their jurisdiction, for *Domicilium citandi et executandi*, the house of the Secretary of the said Chamber for the time being. Done at *Amsterdam, etc.*

The form used for Cargo was very slightly different.

ANÆMIA.—This term denotes simply *absence* of blood, and it implies *deficiency* of blood; but it is employed to denote generally an alteration of *quality*, rather than of quantity, of blood.—*Hoblyn*. Anæmic, *bloodless*.

ANASARCA.—General dropsy; dropsy of the cellular substance.

ANATOCISM.—Interest upon int.; compound int. From the Greek signifying “child”: the int. being the child of the principal.

ANCHORAGE.—A duty taken from the owners of ships for the use of the havens where they cast anchor.

ANCHOR ASSU. Co., for F. and L. Ins., founded in 1849, with an authorized capital of £1,000,000 in 50,000 shares of £20—subsequently reduced to £5—of which upwards of £150,000 was subs. This Co. was based upon the bus. of the ANCHOR LIFE ASSU. Co., founded 1842, but which bus. was restricted to Life and Loan, and chiefly confined to Lond. The present Co. made F. Ins. a very important branch of its bus., and extended its agencies throughout England and many parts of the world. Local boards were estab. in Manchester, Glasgow, and Hull. The report for 1851 said, “In 18 months since the estab. of the fire department 3800 pol. have been issued, ins. nearly 2,250,000, producing in prems. £7109. Up to the end of the last financial year, the losses by fire amounted only to 16 p.c. of the prems. received.” At the meeting in August, 1853, the accounts were still glowing: two millions new F. Ins. during the year; the prem. income, F. depart., £12,000.

With all this apparent progress, the affairs of the Co. were not in a satisfactory position. In 1855 or 1856 an important change in the management of the Co. occurred. Mr. Thomas Cave, then of Maidstone, and now M.P. for Barnstaple, came into the management. He cut down the working expenses, and made, in conjunction with the chairman, Mr. Wm. Lee, M.P. for Maidstone (where a large number of shareholders resided), great efforts to place the bus. on a sound footing. Finding this could not be done as rapidly as they desired, the directors, who were respectable and well-known men, resolved to amalg. the bus. with that of the *National Provincial*. This arrangement was set aside on some technical ground; and a call was made of £1 per share, with a view of carrying on the bus. Some dissensions arose, and in 1857 the Co. was amalg. with the *Bank of Lond. Ins. Co.* This last-named Co. in 1858 amalg. with the *Albert*. On the failure of the *Albert*, steps were taken to wind up this Co.—see below.

It was out of the affairs of this Co. that the leading case of *Dally v. India and Lond. Ins. Co.* arose in 1855. We shall give some details concerning this case under INSURABLE INTEREST.

In 1862 there was before the Court of Chancery an important case arising out of claims made upon the *Saxon So.* by this Co. Of these we shall speak in our hist. of the *Saxon*.

On 21st March, 1870, an order was made by V.C. James for winding up the *Anchor*, and Mr. S. L. Price was appointed liq. On appeal to the Lord Chancellor, the petition upon which the order was made was dismissed, and the liq. therefore set aside. This was in July, 1870.

ANCHOR INDUSTRIAL.—A Life, Endow., and Sickness Asso., set on foot at the close of 1867, with an authorized cap. of £2,000; but appears never to have become fully developed.

ANCHOR LIFE ASSU. Co., founded in 1842, with an authorized cap. of £200,000. An early prosp. states, “This Co. affords to the community every advantage resulting from

a system of Life assu., estab. upon a safe and equitable basis, and embraces the lowest rates of prem. consistent with stability; and a liberal system of loan upon personal security, or otherwise, to parties assu. in this office." "The lives of persons subject to gout, rupture, asthma, and to such diseases as do not essentially tend to shorten life, may likewise be assured in this office upon payment of a prem. commensurate with the increased risk." Endowments to widows and children were granted; and credit for a portion of the prem. on ordin. ins. allowed. The Co. was founded by Mr. Edward Baylis, who remained its act. and man. down to 1846. In 1849 the Co. was re-organized, and indeed re-regis. [ANCHOR ASSU. CO.]

ANCILLARY.—That which depends on, or is subordinate to, some other decision.

ANDERSON, ADAM.—For 40 years connected with the South Sea House, pub. in 1762, *An Historical and Chronological Deduction of the Origin of Commerce from the Earliest Accounts to the Present Time*; containing a history of the great commercial interests of the British Empire, etc., 2 vols. fol. In 1789 the 2nd ed. was pub.; in 1801 the 3rd ed. 4 vols. 4to. A justly celebrated and valuable work, embodying the result of 40 years' labour, replete with useful information; so much of which as bears upon ins., int., usury, etc., will be noticed in these pages.

ANDERSON, E. G. LAUGHTON, Sec. of *Lond. Guar. and Accident* since its formation in 1869, he being one of the founders. He commenced his ins. training in the *Western L.* 1851. In 1858 he entered the *Albert*, and managed its re-insurances department for some years. He has contributed to the lit. of ins. in the form of articles and letters.

ANDERSON, J. J. P., Sec. of *Scottish Widows Fund*, which position he has occupied since 1860.

ANDERSON, ROBERT, Barrister-at-Law, and Sec. of *Essex and Suffolk Equitable Fire* since 1868. He was called to the Bar in 1851, and in 1856 became superintendent of the F. department of the *Yorkshire*, where he gained an experience eminently fitting him for the guardianship of the successful office of which he is now the principal officer.

ANDERTON, JAMES, was for many years agent in Lond. of the *West of England*. He was also one of the founders of the *Law Life*, although he never held any official position in connexion with it. Mr. Joshua W. Butterworth, the well-known law bookseller, in Fleet Street, is our authority on this subject. In a letter to the *City Press* under date 6th Feb., 1868, speaking of Mr. Anderton having been mainly instrumental in founding the now flourishing Law Institution, he says: "Mr. Anderton was destined speedily again to render his professional brethren indebted to him by projecting for their special service a life assu. so., the first that had been originated with particular reference to the legal profession. The result was the estab. of the *Law Life*," etc. Mr. Anderton died in Jan., 1868, at the age of 85.

ANDREW, WILLIAM, solicitor, Lincoln, was founder of the *Lincolnshire F. Office*, in 1851; and in 1854 of the *Midland Ins. Co.*, which took over the bus. of the first-named co. and extended it to Life and other branches. He was the secretary of these Cos. from their formation down to 1862.

ANDREWS, WILLIAM, resident superintendent of *Palladium* at the time of the foundation of the Co.

ANEURISM; disease of the arteries (Class LOCAL; Order, *diseases of organs of circulation*). The deaths from this cause in England show a rather rapid increase. In ten consecutive years they were as follows: 1858, 350; 1859, 371; 1860, 368; 1861, 387; 1862, 373; 1863, 418; 1864, 479; 1865, 499; 1866, 450; 1867, 503; showing a variation from 18 per million of the population living in 1858 to 21 in 1863, and 24 in 1867. Over a period of fifteen years ending 1864 the deaths averaged 18 per million.

The deaths in 1867 were: males, 378; females, 125. The deaths were mostly in the middle and advanced ages of life.

ANGARIA.—Impressing of ships.—*Blount*.

ANGINA PECTORIS; breast-pang: sudden and acute pain in the chest, referred to the sternum (breast-bone), accompanied by intense anxiety and fear of death. (Class LOCAL; Order, *diseases of organs of circulation*.) The deaths from this cause in England are considerable. In 1866 they were 246: males 161, females 85; in 1867, 262: males 166, females 96. The ages at death in 1867 were: males, under 20, 6; between 20 and 45, 22; between 45 and 75, 128; between 75 and 95, 12; females, under 20, nil; between 20 and 45, 14; between 45 and 75, 61; between 75 and 95, 21.

ANGLIAN LIFE AND GUARANTEE CO. was projected by a Brighton gentleman in 1854, but made no progress.

ANGLICUS SUDOR.—The English sweating-fever, or the *ephemera maligna* of Burserius, described by Dr. Caius as "a contagious pestilential fever of one day." It made its first appearance in London in 1480 or 1483.—See PLAGUE.

ANGLO-AUSTRALIAN AND GOLD-DIGGERS MUTUAL LIFE ASSU. CO.—Projected in 1852, for Life, Loan, and Guar. bus.; but it did not get beyond prov. regis. under that title. We believe it broke out in the following year under the title of *Anglo-Australian and Universal*, etc., which see.

ANGLO-AUSTRALIAN AND UNIVERSAL FAMILY LIFE INS. CO., founded in 1853 (under 7 & 8 Vict., c. 110), with an authorized cap. of £150,000, in 15,000 shares of £10. This

scheme abounded in "new features," most of which we shall briefly notice. The Co. was estab. "for granting infantile, adult, and matrimonial assu., annu., endow., loans, and guar. ; and for the purchase of rev. property ; with special application to infants, emigrants, and gold-miners." "75 p.c. and eventually 100 p.c. of the entire profits divided on a new and most equitable principle among the members." "*No commissions paid to agents or others.*" Then the following :

The design in the estab. of this Co. is to supply an extensive vacancy in the application and practice of L. Assu. by the intro. of new and highly important features of great practical utility. The operations of the Co. will embrace every improvement calculated to be permanently beneficial to its members. Its constitution will protect the policy-holders from every species of liability and loss which attach more or less to sos. whose *only legal security* rests in the *ann. prem. fund*,—and while the members have the security and profitable use of an ample capital fund, they will possess a mutual interest in the prosperity and government of the Co., being entitled to, etc. (profits as before stated).

The leading objects of the Co. were comprised under 5 principal departments, viz., 1. INFANT INS. 2. GENERAL INS. 3. EMIGRATION INS. 4. AUSTRALIAN INS. 5. GOLD-MINING ASSU.

Infant Ins.—The subject of Infant Assu. is highly interesting and important, and calculated to prove far more beneficial to society than even adult assu.—the great utility of which is now generally recognized. The only cause perhaps which has hitherto operated to retard its adoption is the fear that it would encourage infanticide. But the principle of Infant Assu. as adopted by this Co. is calculated to check any tendency to this crime, and at the same time to afford the fullest advantage that can possibly be derived from early assu. Great pecuniary profit often arises to policy-holders during life on *adult* assu. ; how much greater then must the profit be upon the pol. of those who were ins. in infancy, from the increasing accumulations of money at compound int.!! What a valuable boon therefore would parents confer upon their children by ins. their lives while they are young. An orig. set of prem. tables for the several forms of Infant Assu. has been calculated expressly for this Co. ; assu. and annu. are granted on infant lives from the age of 3 months to 14 years, and embrace the following benefits : the prem. for which can be paid in one sum, or by ann., half-yearly, or quarterly payments. Premis. not forfeited through inability to continue them.

We shall give a *résumé* of the various schemes of infant ins. contained in this prosp., many of which were orig. and ingenious, under CHILDREN, INS. OF. Under department No. 2, pol. were granted on male and female lives from 15 to 75. The only special features under this head were the following :

Legacy Bonds, from £5 to £5000, by which relatives or friends can give possession of a legacy in their lifetime at a great saving, and avoid the legacy duty. Thus, a gentleman between 30 and 40 desirous of leaving his niece £1000 at his death, would save £500 to the estate, and the legacy duty, by obtaining a legacy bond of this Co.

Policies of Exchange, from £5 to £5000, which can change hands by endorsement, like a bill of exchange ; are totally free from the payment of premis. or the performance of conditions on the part of the assu., are made payable to the holder seven days after satisfactory proof of death.

Guarantee Policies, for sums payable in cases of defalcation and breach of monetary trust, with L. assu.

Widows, Orphans, and Survivorship Annuities, for permanent incomes after the death of specified persons, as husbands, fathers, masters, friends, etc.

The next department, *Emigration Ins.*, we shall speak of under that head. The 4th department, *Life Assu. in Australia*, was spoken of as follows :

The great and increasing success which has so long attended the operations of Life Assu. in England, and the happy effects which have resulted therefrom, prove that its introduction was a great blessing, and warrant the expectation that in Australia also the estab. of a well-constituted assu co., conducted on principles of liberality, and possessing every facility for promoting the extension and beneficial application of the science to the peculiar features of Australian life, will be as much appreciated and produce results equally as salutary as in this country.

The practical development of the principle of Guarantee Assu. for honesty has afforded us ample and satisfactory evidence of its utility, both in a social and commercial aspect. And this fact furnishes a strong argument for its extension to Australia, where the Co. will transact every variety of Life Assu., Annu., and Guar. which characterize its operations in England, both as to infants and adults.

The 5th department, *Life Assu. at the Gold Regions*, was thus set forth :

This department will be conducted on a system of *convenience* to the assured, and *safety* to the Co., and will comprise—I. The assu. of capital sums from £5 to £3000, payable at death. II. The assu. of capital sums from £5 to £3000, payable at a specified age, or at death, if it occur before reaching the given age. III. The assu. of life incomes from £5 to £500 per annum, to commence at any given age. IV. The granting Annu. Assu. for £5 and up to £500 p.a. for life, after attaining a specified age, together with the sum of £5 and upwards to £1000, payable at death, whenever it may occur.

The man. director and act. of the Co. was Mr. Tobiah Pepper ; the sec., Mr. John Newton.

In 1855 it took over the bus. of the *Accumulative Life* ; and out of that amalg. arose the famous case of *King v. Accumulative*, of which we have given an abstract under AMALG. In 1858 its entire bus. was trans. to *British Provident*, and out of this trans. arose the case of *Anglo-Australian v. Brit. Provident*, heard before Lord Chancellor Westbury, in 1862, wherein the question as to what indemnity should be given to a co. which sells its bus. was decided. [AMALGAMATION.] See also *Dict. of Decisions in Ins. Cases*.

ANGLO-FRENCH MARINE INS. CO.—This Co. was projected in 1859 by Mr. John J. Peddell, solicitor, 82, Cheapside, and Mr. Alex. Gunn, "newspaper proprietor and projector of ins. cos." It came to nothing.

ANGLO-INDIAN.—An Englishman domiciled in the Indian territory of the Crown. [INDIA, INS. IN.]

ANGLO-SAXON HOME AND COLONIAL LIFE ASSU. CO. was projected in London, in

1852, by Rev. J. W. Worthington, Doctor of Divinity, and Thomas Price. The cap. was to be £50,000, in shares of £10. The Co. did not go forward.

ANGLO-SAXON LIFE AND GUARANTEE.—This Co. was projected in 1853, but does not appear to have gone far beyond regis. of title.

ANGYLDE.—The rate formerly fixed by law, at which certain injuries to person or property were to be paid for. In injuries to the person it seems to be equivalent to the 'wer,' i.e. the price at which every man was valued.—See GILDS.

ANNESLEY, ALEXANDER, of the Inner Temple, Solicitor, pub. in 1808 : *A Compendium of the Law of Marine Ins., Bottomry, Ins. on Lives, and of Ins. against Fire*; in which the mode of calculating averages is defined and illustrated by examples. The author says :

In the arrangement of the Compendium, the very judicious plan of Mr. Park has been followed, beginning with the Pol. the foundation on which the entire superstructure is raised, descending to a more particular view of the subject, and entering into the minutiae of the system of British Maritime Law with all possible brevity, without losing sight of that degree of accuracy and perspicuity which can alone constitute the merit of a work of this nature.

This is a very useful book ; and we shall quote from it occasionally in these pages.

ANNIHILATOR FIRE.—An instrument in which a large quantity of non-combustible gas, chiefly carbonic acid, can be quickly generated. Directed on burning matters, this gas stops combustion by excluding air.—*Brande*. We shall give an account of numerous contrivances of this sort under FIRE ANNIHILATORS.

ANNUAL ACCOUNTS.—See ACCOUNTS.

ANNUAL BONUS LIFE (AND FIRE) ASSU. SO., projected in 1852, but apparently never completely regis. The prosp. stated that the Co. was to be founded on the principles of the Art Union of Lond. The plan was certainly a novel one. The payment of 10s. 6d. p.a., which applied to persons between the ages of 10 and 20 years, was to secure a certain sum at death, varying with the age, thus : at 10, £80 11s. 1d. ; at 15, £58 3s. 6d. ; at 20, £51 3s. 11d. The guinea scale extended to persons from 20 to 70 years of age : £1 1s. p.a. secured, age 21, £100 ; 25, £90 0s. 2d. ; 30, £79 4s. 6d. ; 35, £69 13s. 10d. ; 40, £61 10s. 1d. ; 45, £54 3s. 4d. ; 50, £47 15s. 3d. ; 55, £38 10s. 1d. ; 60, £25 16s. 3d. ; 65, £17 12s. 9d. ; 70, £12 2s. 3d.

The prems. were said to be calculated on the basis of the ENGLISH LIFE TABLE, and certified by the Actuary to the Commissioners for the Reduction of the National Debt ! Unless persons insured for at least two half-guinea chances, they were excluded from the enjoyment of a bonus.

The "annual bonuses" were to be paid to the insured, "not in equal fractional amounts, but in accumulated sums, as bounties for the encouragement and promotion of life ins. in general, and varying in amount from £10 to £1000." The first distribution was to be made 1st July, 1853, and continued every succeeding year, in the manner of the Art Union : "When every member of the So. who has subscribed one guinea before 1st June, will have an opportunity of balloting for a large share of the annual profits of the So." Two hundred and fifty bonuses were to be balloted for, of the aggregate value of £5000 ! The editor of the *Post Mag.* designated it a lottery in disguise.

There was to be no medical examination, except in case of a diseased life ; a declaration of health being sufficient. All that had to be done was to call upon the agent, pay the half-guinea, or guinea, and take the receipt. It is believed that 2000 or 3000 of of these so-called insurances were issued. The prosp. said :

The great success which has crowned the operations of sos. based on the principle of granting prize rewards, induces the confident belief that were a prospect of more immediate gain offered to the public than is at present offered by the mode of paying bonuses, the practice of Life Ins. would be very greatly extended ; but, unlike a lottery, which, as a question of morals, it in no respect resembles, the good contemplated will be accomplished without inflicting pecuniary injury upon any one.

No directors' names were pub. ; the only name on the prosp. being that of George Baynham, "registrar and clerk to the So." But it transpired afterwards that Mr. Henry Owen was actuary.

An awkward circumstance occurred very early in the history of the enterprise. In Oct. 1862, the actuary of the Co. (also sec. of the *Counties Union*) was charged at the Mansion House, before the Lord Mayor, with having unlawfully conspired with divers other persons to cheat and defraud Dr. John Hall Davis ; and that in pursuance of the said conspiracy he and they, under false pretences, had obtained from Dr. Davis the sum of £100. He (the actuary) was committed, and afterwards tried at the Old Bailey, and acquitted—but the project did not survive the blow.

ANNUAL LIST OF MEMBERS.—Every co. regis. under the Cos. Act, 1862, and having a cap. divided into shares, shall (sec. 26) make once at least in every year, a list of all persons who, on the 14th day succeeding the day of the first ordinary general meeting in each year, were members of the co. ; and such list shall state the names, addresses and occupations of all the members therein mentioned, and the number of shares held by each of them ; and also the following particulars :

1. The amount of the capital of the co. and the number of shares into which it is divided.
2. The number of shares taken from commencement of co. to date of summary.
3. The amount of calls made on each share.
4. The total amount of calls received.
5. The total amount of calls unpaid.

6. The total amount of shares forfeited.

7. The names, addresses, and occupations of the persons who have ceased to be members since the last list was made, and the number of shares held by each of them.

The above list and summary shall be contained in a separate part of the register, and shall be completed within seven days after the 14th day, and a copy forwarded to the Registrar of Joint-Stock Cos. Penalty £5 per day to co., manager, and directors.

The 30 & 31 Vict., c. 131 (1867), provides (sec. 32) that, after the issue by the Co. of a share-warrant, the above ann. summary shall contain the following add. particulars :

The total amount of shares or stock for which share-warrants are outstanding at the date of the summary, and the total amount of share-warrants which have been issued and surrendered respectively since the last summary was made, and the number of shares or amount of stock comprised in each warrant.

ANNUAL MORTALITY.—The ordinary average ann. mort. of a European pop. may properly be estimated at *one death to every forty living*. This proportion is subject to little variation on account of any common increase or decrease of pop.—*Edmonds*.

Modern mort. tables are arranged in such a manner as to show the ann. mort. p.c. *for each age of life*. This is a very great advantage in many respects. Among other uses it furnishes a means of testing the effect of SELECTION, etc. This constitutes an important feature of the ENGLISH Life Table, and the EXPERIENCE Table No. 2.

The subject will be fully discussed under LAW OF MORT.

ANNUAL PENSION.—A yearly profit or rent.—*Scotch Law*.

ANNUAL PREMIUMS—All ins. prems. (except on voyage pol. in Marine and Mariners' Life ins.) are calculated to be payable annually in advance. Where the payments are made half-yearly, quarterly, monthly or otherwise, an add. is made for loss of int. arising from the non-use of the money, and a small charge should also be made for add. trouble involved in preparing receipts, collecting, and passing through the books. In F. Ins., Accident, Cattle, Fidelity, Glass, Hail, etc., Ins. the prems. are receivable annually only. In several Life offices the yearly prems. are made to run from certain fixed days, as in the *National Provident*. In Life Ins. the ann. prems. are "equalized," or they would fluctuate with each year of life. See LIFE INS. PREMS.

ANNUAL SUMMARY.—See ACCOUNTS OF LIFE OFFICES; and ANN. LIST OF MEMBERS.

ANNUITANTS.—Out of the recent winding-up of the *Albert* the law regarding the position of annuitants in ins. asso. whose bus. have been trans. may be considered as settled. An annuitant who has not by express written assent—by some instrument of equal force with the orig. grant—released the asso. orig. granting the annuity, from payment thereof, will be able to fall back upon its shareholders and property for payment. The intermediate asso. paying the annu. will be regarded only as the agent of the orig. co.; hence the question of NOVATION will not arise. This indeed was held in the case of the *English and Irish Church Ins. Asso.*; but it may now be regarded as settled in *Pott's case—Dict. of Decisions in Ins. Cases*.

ANNUITANTS, LONGEVITY OF.—The longevity of annuitants has become proverbial. But as proverbs are not always to be relied on in business matters, we propose to record a few facts of such a character as not to admit of dispute. These are drawn from the records of tontines and government annuity schemes, and in every case there has been judicial proof of age. In the English tontine of 1693, out of 1002 persons enrolled, 12 reached 90 and upwards, and one, a lady at Wimbledon, reached 100. In the Irish tontine of 1773, 5, 7, there were enrolled 1415 males and 1969 females, most of them at very young ages. Previous to August 1856 there had died at age 90 and upwards, *males* 18, the oldest being 95; *females* 29, the oldest being 98. There were then living aged 75 and upwards, 60 males and 120 females.

In the English Tontine of 1789 there were enrolled 4177 males and 3974 females, most of them also at very young ages. Previous to August 1856 there had died at age 90 and upwards, *males* 18, the two oldest being 95, *females* 23, the oldest being 99. There were then living aged 64 and upwards, *males* 755, of whom one was 93, and another 94; *females* 1084, of whom the oldest was 92.

Among the life annuitants of the Sinking Fund commencing 1808, there had been enrolled by the 31st Dec. 1850, *males* 6217; *females* 10,595. Of these the majority were admitted at advanced ages. There had died previous to 8th May, 1854, at age 90 and upwards, *males* 125, the oldest being 98; *females* 174, the oldest of whom was 99. There were still living at 90 and over, *males* 25, *females* 26.

But among the annuitants of the Sinking Fund was another class, selected by individual speculators, and by ins. offices, and not included in the preceding figures. They were males, and the result of the speculation is given under another head. [GOVERNMENT ANNUITANTS TABLE OF MORTALITY.]

Mr. A. G. Finlaison in his report of 1860 has given us materials to test the actual result. The number of the lives enrolled was 675, at ages ranging from 59 to 92, but very few beyond 81. Up to the 8th May, 1854, there had died at ages 90 and upwards 61, the oldest being 98. There were still living 369, of whom 8 were 90 and upwards.

But another and yet more important observation was made up to 10th June, 1856, confined to the 322 males who were entered at age 73 and upwards. Of these 321 had died,

68 aged 90 and upwards, and the remaining 1 was living aged 101. This was David Rennie, who was baptized 28th Feb. 1755, and died 2nd March, 1857, in his 103rd year.

Some add. facts will be given under head of TONTINES.

ANNUITIES.—An annuity has, in the strict technical acceptation of the word, been defined by Lord Coke to be “a yearly payment of a certain sum of money granted to another in fee, for life or years, charging the person of the grantor only.” If the annuity be secured solely out of the rent of land, it is called a Rent-charge. [RENT-CHARGE.]

An annuity may be receivable during a definite number of years, in which it is termed an *annuity certain*. The value of annuities of this kind depends only on the rate of int. for money, and the number of years during which the annuity is payable. If the annuity be payable for ever, it is called a *perpetual annuity* or a *perpetuity*. If for a limited number of years, a *term annuity*. If not till after a certain date, it is called a *deferred annuity*. If its payment be dependent on the happening or non-happening of some particular event, it is called a *contingent annuity*. If the commencement or the continuance of the annuity is any way dependent upon the duration of any life or lives, it is called a **LIFE ANNUITY**. It is with these we have especially to deal in these pages.

A *Life annuity* may partake of some of the incidents of an annuity certain. If the annuity be for the whole period of any particular life, it is called a *whole-term annuity*. If it be on a given life for a certain number of years, it is called a *term annuity*; for a few years only a *short-term life annuity*. If the annuity be payable on any one life, provided another be then living, or providing some event happen or do not happen, it is a *contingent life annuity*. If it is not to be entered upon till after the death of some person or persons previously living, it is called a *reversionary annuity*. When it is continued only for a term of years, provided an individual or individuals then living shall survive that term, it is called a *temporary life annuity*. When it is payable during the lives of several persons living at the same time, it is called a *joint-life annuity*. When to the survivor of several lives, then a *survivorship annuity*. There are also *increasing* and *decreasing* annu. These may depend upon life or otherwise.

There is yet another definition. An annuity is *curtate* when it ceases with the last payment prior to the death of any specified life: *complete* when the payment is to be continued up to the day of the annuitant's death. See ANNUITY APPORTIONMENT ACT. The values of a life annuity must necessarily vary with the contingencies upon which it is dependent. There are actuarial rules for dealing with all the cases named. Two or more of the preceding contingencies may be combined; but however complex, they fall within the grasp of the experienced actuary.

ANNUITIES ON LIVES, HIST. OF.—The hist. of life annu. has remained to be written. We propose here to supply a considerable contribution towards the materials required for the purpose.

By way of explaining the plan of the present chap.—which must of necessity be one of the most extended in this work—we may at once say that our treatment of life annu. will be *historical*, and not scientific. It would indeed be a matter of much interest to the actuary that the progressive formulæ evolved in the scientific treatment of the doctrine of life annu. should be recorded. We leave that task for other hands: we have ample work before us. It seems important further to remark, that while, at the present period, life annu. transactions are so far secondary and subordinate to life ins. as not prob. to bear the proportion of *one-tenth*—taking the cap. sunk in the purchase of life annu. as against the cap. to be realized by the payment of claims under life pol.—yet the facts were formerly very much the other way. For several centuries before the present life annu. constituted a recognized mode of investment—life ins. was regarded as a speculation. This will to a considerable extent account for the fact, presently to be noted, that all the earlier writers upon life contingencies directed their attention to annu.; and life ins. was an after-thought. Or in the apt dictum of Mr. E. J. Farren: “As life assu. formulæ were eventually derived from annu. calculations, so it was not until an after-period that life assu. attracted notice as a distinct subject.”

It is impossible to fix at what period of the world's history annuities on lives were first brought into practice. It is only required for our present purpose to know when they first became subjected to any measure of value. Most of the best-informed writers agree that the first judicial occasion for valuing annu. on lives arose in consequence of the Falcidian Law (*Lex Falcidia de Legatio*), which in B.C. 40 was adopted in the Roman empire; and which declared that a testator should not give more than three-fourths of his property in legacies, and thus *one-fourth* was required to be secured to his legal heirs. It became necessary, in the execution of this law, to value all such legacies as were charged upon the succession for limited terms, or as annuities for life. It is possible that several means of accomplishing this were attempted. We learn from Æmilius Macer (A.D. 230), that the method which had been in common use at that period was as follows: From the earliest age until 30, to compute 30 years; from age 30, so many years are computed as are wanting until 60: therefore never more than 30 years are computed.

It was no doubt the employment of this defective method which caused the great jurist, the Prætorian Præfect Ulpianus, to give his attention to the subject. It is impossible to ascertain what materials he called to his aid in preparing his estimate, nor is it our present purpose to do so. All that can be learned on that subject we shall present to

the reader under the head of ROMAN LIFE TABLE. We only now present the results, reduced from their orig. crude form into a tabular arrangement, as follows :—

It seems pretty certain that the element of *interest* was not taken into account ; but this we shall discuss hereafter. The table is here presented as the *first known measure of life annuity values graduated with reference to age*. This very table has been brought into use during the present century by the Tuscan government for the valuation of life annuities !

By way of preface to the hist. of life annuities in England it seems necessary to call attention to the fact that in earlier times all int. for the use of money was absolutely forbidden : first, by the canons of the Church, and afterwards by direct legal enactment ; while in many parts of the continent of Europe, where the power of the Church was more despotic, the prohibition was even more severe. The first real enactment against usury in Gt. Brit. (for the distinction between *usury* and *interest* had not then been created) was in the reign of Richard I. A.D. 1197, forbidding Christians to take any recompense for money lent. Other similar enactments followed. [USURY.] The Jews do not appear to have been prohibited in the enactment of Richard ; and they and the Lombards became the great money-lenders of Europe.

In 1282 the king of Scotland gave Eric, king of Norway a marriage portion of 14,000 marks with his daughter ; reserving to himself an option of giving a life-rent of lands of the ann. value of 700 marks as an equivalent for half that sum. The annu. on the life of Margaret, then in her 21st year, was thus valued at 10 years' purchase. Whether this was the rule of the period, or merely an accident, cannot now be determined.

As the law did not recognize the lending of money at usance, it could not impose any limits upon the rate of int. charged. But the Jews and Lombards carried on the bus., charging no doubt most extortionately—as indeed they must, when the whole principal was at stake by reason of the transaction being in violation of the law. Hence, no doubt, was passed in 1545, 9th Henry VIII., c. 9, an act restricting the rate of interest to 10 p.c. [INTEREST OF MONEY.]

The celebrated Benvenuto Cellini, in his biography, relates that in the year 1552, he travelled to Rome to see his banker, Bindo Altoviti, who, as was not unusual at that period, was learned and a protector of the arts and sciences. His fortune had suffered by the political intrigues of the times, and instead of paying Cellini 1200 gold thalers due to him, it was arranged between them that he should pay an annuity of 15 p.c. during the life of Cellini in lieu of the money. Cellini speaks of other similar contracts, and from the manner in which he speaks of them it would appear that such transactions were not new, but long known, and of common occurrence.

In a work pub. in 1554, by Dr. Thomas Wilson, entitled *A Discourse upon Usurie*, &c., we find the following :—

A corporation taketh a 100 li. (s) of a man to give him 8 in the 100 li. during his life, without restitution of the principall. It is no usurie, for that here is no lending, but a sale for ever of so much rent for so much monie. Likewise it is, if a private man hath a thousand pound lying by him, and demandeth for his life and his wife's life, a 100 li. by the yeere, and never to demand the principall. It is a bargaine and sale, and no usurie, for that the principall is not to be restored againe at any time. And therefore no lending can be pre-supposed.

Here is shown a clear perception of the business of life annuities, but shaped in such a form as to avoid the usury laws.

It appears to us, after a careful consideration of the subject, that the system of granting loans, *repayable by annuities on lives*, had been specially devised with a view to the evasion of the laws against usury prior to 1545 ; and that the evasions continued in practice after the passing of that Act. The authorities we shall have occasion to quote as we proceed will, we think, fully sustain this view.

The Act of 1545 had been repealed in 1552 ; but in 1570 the legal rate of int. was again fixed at 10 p.c.

During the greater part of the 16th century probably much speculation was carried on in annuities by private dealers ; especially in the latter half. The annals of that period teem with records of the doings of one Audley, who, although originally only a poor clerk with six shillings a week, was so neat an adept in the tricks of law, and so keen in his annuity dealings, which chiefly consisted in purchasing annuities well secured upon property, that he became one of the richest men of his time. His mode of action may be best judged of by the reply made to one of his victims, who accuses him of having no conscience,—“ We monied people must balance accounts. If you don't pay me my annuity, you cheat me ; if you do, I cheat you.”—*Francis*.

Malynes, an English merchant, in his famous *Lex Mercatoria*, pub. 1622, gives the following remarkable account of the annuity dealings of that period :

Having intreated of monies delivered at interest without casualltie, and so termed Usurie by reason

of the contract of benefit without aduenture: it is conuenient to handle of monies deliuered vpon Liues, when merchants doe giue twelue vpon the hundred without pawne, called beyond the seas after the pennie 8: the moitie whereof with pawne is six upon the hundreth, or double eight, according to the penny 16 as aforesaid. The pennie 8 is $12\frac{1}{2}$, for eight times $12\frac{1}{2}$ maketh one hundreth: so the pennie 16 which is vsed for rents vpon houses or lands is $6\frac{1}{2}$, according to which pennie 8 vpon one life or double for one yeare (so they all liue) is equall vpon eight liues. This is much used in diuers cities beyond the seas, to draw monies into their hands, as for example:

One hundreth pounds is deliuered to haue two hundreth pounds for it at the yeares end vpon eight liues, if they all liue, you haue two hundreth pounds to buy a perpetuall rent, or sometimes as it hath beene, to giue 20 per 100 for the yeare, and so from yeare to yeare, and dying the principall is theirs.

One hundreth pounds for eight liues (by equalitie decreasing the pennie eight) is £12 10 for two liues, £11 2 for three liues, £10 for foure liues, £9 1 9 pence, is £6 5 for eight liues.

The citie of Amsterday (Amsterdam) was wont to giue good consideration, and did obserue this order vpon a hundreth guelders:

For eight liues gaue ...	£16	13	4
Of nine liues ...	19	1	0
Vpon ten liues they gaue ...	22	4	5
Vpon eleuen liues ...	26	13	4

Vpon twelue liues ...	£33	6	8
Vpon seuen liues ...	14	6	4
Vpon six liues ...	13	6	8

Here you are to remember the obseruations of assurers, *whether the persons be young or old, sober in their diet and behaviour, much travelling abroad, or staying at home, subject to sicknesse, and the like considerations.*

Monies deliuered vpon annuities for rents, seeme more reasonable than pensions vpon liues, because you beare onely the aduenture of the decay of houses or destruction of them in time of warre: and much more should bee giuen without pawne, than pawne or morgage.

It is commodious for a man, hauing waste grounds and intending to build vpon them, to take much money vpon rent after $6\frac{1}{2}$ pro cent. which many cities giue continually to increase their wealth and inhabitants. And because the valuation of their money doth often alter and is inhaunced, whereby all things become deerer, the parties are aduised to haue their rents paid *in specie*, in Crownes, Dollers, Ducats to be paid as formerly they were currant; the dangers in times of wars causeth rents to decrease, for the ancient rent is alwaies first to be paid, although all others be losers.

In 1624 the legal rate of int. in England was reduced from 10 to 8 per cent.; and remained at this latter rate until 1651.

It seems doubtful whether any tables for valuing annuities existed before the early part of the 17th century. About 1620, William Webster published his tables of simple int. and also "His Tables of Compound Int., with true Valuations of Annuities, Leases, Fines, and Reversions," 2nd ed. 1629. These tables, however, and the values deduced from them, are all for fixed terms of years, and the contingency of life is not even contemplated by them. The same may be said of the tables of Wm. Purser, pub. 1634: *Compound Int. and Annuities, containing the art of Decimal Arithmetic; also the Value of Annuities.*

In 1651 the Rump Parliament reduced the legal rate of int. from 8 to 6 p.c. This was legitimatized in 1660; and it remained at that rate until 1714.

In 1658 John Newton pub. *Table of the Value of Annuities*; but again there is no mention of Life Annuities.

In 1661 H. James Hodder's famous book of arithmetic was first pub., and therein was "A very brief and necessary table to find out the present worth of the annuity, or yearly rent for 21 years or under, after the rate of 6 p.c. p.a."

In 1669 a "second impression" of Roger Clavell's *Tabula Feneratoria* was pub., in which was contained: *Tables for the forbearance, discompt, and purchase of annuities to 31 years, at the rate of 6 p.c. p.a., according to the late Act of Parl.* Still not a word on the subject of Life Annuities!

In the middle of the 17th century, Pascal, Fermat, and Huygens laid the foundation of the mathematical theory of probabilities, which even in its first crude stages was of great service in the investigation of life contingencies; and about the same time John Wallis, an Englishman, pub. a treatise on Algebra, which also had to play an important part in the practical development of the last-named science. Huygens' tract, which appeared in 1658, was the first systematic treatise on the *Doctrine of Chances* which had been pub.: the doctrine of chances taught us how to estimate life contingencies: the science of life contingencies enabled us to measure the value of life annuities.

The mention of some of the preceding names carries our minds at once to the continent of Europe, whither we must pursue the subject, well assured that our enterprise will bring an abundant reward.

On the 25th April, 1671, it was resolved by the States General of Holland to negotiate funds through the medium of Life Annuities. On the 30th July following the resolution was confirmed; and on that same day was presented to the Assembly a report by the Grand Pensionary, John De Wit, explaining the basis upon which such an enterprise could be successfully carried out. This event constitutes an important epoch in the hist. of Life Annuities. We have, however, no time to dwell upon the circumstance: we must approach the report itself:

Noble and Mighty Lords.—In so extensive an administration as that of the united country of Holland and West Friesland, it is better, as I have several times stated to your lordships, for several reasons perfectly well known to you, to negotiate funds by Life Annuities, which from their nature are infallibly terminable, than to obtain them at int. which is perpetual, or by redeemable annuities; and that it is likewise more useful for private families who understand economy well, and know how to make a good employment of their surplus in augmenting their capital, to improve their money by life annuities than to invest it in redeemable annuities, or at int. at the rate of 4 p.c. p.a.; because the above-mentioned life annuities, *which are sold even at the present time at 14 years' purchase*, pay in fact much more in proportion than redeemable annuities at 25 years' purchase. I have consequently respectfully to submit

to your lordships the unchallengeable proof of my assertions, and at the same time to respond to the wish manifested by the members of this body to have such proof in writing. That proof, founded on a solid basis, is proposed to your High Mightinesses in the following manner:—

Value of Life Annuities in proportion to Redeemable Annuities.

I lay down the following presuppositions in order to determine the proportion of a life annuity to a redeemable annuity. For example, in presupposing that the redeemable annuity is and will be current at 25 years' purchase, or at the rate of 4 p.c. p.a., we must find at how many years' purchase the life annuity should be sold, to be in proportion to the aforesaid redeemable annuity, in such manner that the life annuity may, if not with mathematical precision, at least in its discovered value, be more advantageous to the purchaser than an annuity redeemable with the same capital.

FIRST PRESUPPOSITION.

I presuppose that the real value of certain expectations or chances of objects of different value, must be estimated by that which we can obtain from equal expectations or chances dependent on one of several equal contracts. Let us take, for example, a small matter, and under circumstances intelligible at first sight: A person has two different expectations or chances, which may easily lead, the one to nothing, the other to 20 stuyvers. If, by one or several equal contracts, he can obtain for 10 stuyvers two like expectations or chances, we must estimate that the two aforesaid chances are worth to him exactly 10 stuyvers, because he can really obtain for 10 stuyvers these two expectations or chances by making an agreement with another person that each of them shall take 10 stuyvers, and then gamble or draw lots, by *odd or even, head or tail, blank or prize*, or in some such way, to determine which of the two should have the 20 stuyvers; thus by the said contract, equal in every regard, he evidently finds himself in the position of having in reality the two expectations or chances, the one of nothing, the other of 20 stuyvers.

SECOND PRESUPPOSITION.

That in taking at pleasure some years of a man's life, limited to the time when he is in his full vigour, and neither too young nor too advanced in age (this space of time shall be here 50 years, namely, from the third or fourth year of his age up to the fifty-third or fifty-fourth year), it is not more likely that this man should die in the first half-year of a given year than in the second half: similarly, it is not more likely that he should die in the second half-year of the aforesaid year than in the first half. But although it depends entirely on chance whether this man, after having lived to the given year, and dying in the course of that year, should demise in its first or second half, one finds nevertheless, in this regard, an equality of likelihood or chance similar to the case of a tossed penny, where there is an absolute equality of likelihood or chance that it will fall *head or tail*, although it depends entirely upon chance as to the side on which it shall turn, and this to so high a degree that the penny may fall *head* 10, 20, or more times following without once falling *tail*, or *vice versa*.

THIRD PRESUPPOSITION.

That a man having passed the aforesaid vigorous time of his life, namely, the fifty-third or fifty-fourth year of his age, it begins to be more likely that he should die in a given year or half-year of the second period than has previously been the case; or that it is not likely, with respect to another man of like constitution or state of body, that the latter should die in less than a year or half-year of the said vigorous time of his life; whilst this likelihood or chance of dying in a given year or half-year of the ten first following years, namely, from 53 to 63 years of his age, taken inclusively, does not exceed more than in the proportion of 3 to 2 the likelihood or chance of dying in a given year or half-year during the aforesaid vigorous period of life: so that taking, for example, two persons of equal constitution, one aged 40 years, and the other 58 years, if these two persons made such a contract that in case the person of 58 years shall happen to die in less than six months, the one aged 40 were to inherit a sum of 2000 florins from the property of the defunct; but that if on the other hand the person aged 40 years should die in less than six months, the one aged 58 were to have 3000 florins from the property of the deceased; such a contract cannot be considered disadvantageous for the person who would have the 3000 florins, if the event were favourable to him, and who in the contrary event would only lose 2000 florins.

I then presuppose that the greatest likelihood of dying in a given year or half-year of the second series of the ten following years (that is from 63 years to 73, taken one with the other, rather than in a given year or half-year of the period of the vigour of life), cannot be estimated at more than double, or as 2 is to 1; and as the triple, or as 3 is to 1, during the seven following years, that is from 73 years to 80.

Finally, in supposing that life necessarily ends at the twenty-seventh year after the expiration of 50 years of age above presupposed, this time is neither assumed at too high nor too low a standard, as experience manifestly teaches us that the life of some men exceeds by a considerable period the age of 80 years, the age of 81 years and even more.

These three articles being presupposed, we have, by a demonstrative calculation, mathematically discovered and proved that the redeemable annuity being fixed at 25 years' purchase as above, the life annuity should be sold at 16 years' purchase, and even higher, to be in equality one with the other; so that in the purchase of one florin of life annuity, on a young and vigorous nominee, more than 16 florins should be paid, as is proved by the following demonstration.

We do not propose to follow the learned author through his demonstrations. We have accompanied him thus far from a belief that many even popular readers will desire to see something more than a mere outline of such an historically important document; and for the further purpose of showing how early the then young theory of mathematical prob. began to be applied to demonstrate the science of life contingencies.

Nor is it necessary that we should follow De Wit's illustrations in detail, for Mr. Hendriks has prepared a summary of the result, which is at once concise, and comprehensive of the author's meaning:

Firstly. Out of 128 lives, aged say 3 years, 1 is supposed to die in every half-year of the first 100 half-years or 2 per annum for 50 years, leaving 28 alive, aged 53 years, at the end of the term; out of whom 1 dies in every 9 months, being 0.66 per half-year, during the next 20 half-years, or 1.33 per annum for 10 years, leaving 15.66 alive, aged 63 years, at end of second term; of whom 1 dies in every year for 10 years, being 0.5 per half-year during the next 20 half-years, leaving 5.66 alive, aged 73 years, at the end of the third term; of whom 1 dies in every year and a half for 7 years, being 0.33 per half-year during the next 14 half-years, leaving 1 alive, aged 80, at the end of the fourth term; which survivor does not live over another half-year. *Secondly.* Out of the 128 lives, those who die in the respective half-years between the ages of 3 and 80, will receive an annuity certain in half-yearly instalments, for a term equal in continuance to the number of completed half-years elapsed between age 3 and the date of their death; therefore, the sum of the present values of half-yearly annuities certain, for the corresponding terms multiplied into the numbers *dying* within such respective terms, gives the present worth of all the annuities which will be enjoyed by the 128 lives, $\frac{1}{128}$ of which represents the present value of the single life annuity at age of, say, 3 years.

This system of valuation Mr. Hendriks finds to be identical with the fifth method described by Tetens.—(*Assu. Mag.*, No. 1, pp. 9 and 18 ; No. 2, p. 18.)

We must make one or two further selections from the original document for the purpose of showing how some of the practical points incident to dealings in Life Contingencies were perceived from the very beginning. Thus, on the question of *selection against the office* :

The person who for 16 florins has purchased 1 florin p.a. on a young, vigorous, and healthy life, has made a remarkably advantageous contract. I assert it to be remarkably advantageous for the following reasons : Because, in the first place, we have not been able to rate at a certain price, by perfect calculation or correct estimation, the power which the annuitant possesses (power which is of very great value to him), of choosing a life, or person in full health, and with a manifest likelihood of prolonged existence, upon whom to constitute or purchase his annuity ; and there is much less risk or danger of a select, vigorous, and healthy life dying in the first half-year than in some of the following half years at the beginning of which the aforesaid life might perhaps prove to be in a weak state of health or even in a fatal illness ; and such greater likelihood of prolongation of life in the purchase of an annuity upon a select, healthy, and robust life, may further extend itself to the second, third, and some other following terms or half-years. . . .

In the third place . . . it is, however, certain, when we examine the matter very scrupulously, that the likelihood of the decease of the nominees upon whom life annuities are usually purchased is less considerable and smaller in the first years after the purchase than in the subsequent years, seeing that the said life annuities are oftenest purchased and sunk upon lives of young and healthy children of 3, 4, 5, 6, 7, 8, 9, and 10 years or thereabout. During that time and for some years ensuing, these young lives, having become more robust, are less subject to mortality than about 50 years afterwards, and than for some years anterior to these 50 years ; and so much the more as during the first aforesaid years they either are not, or are but little, exposed to external accidents, and extraordinary causes of death, such as those from war, dangerous voyages, debauch or excess of drink, of the sex, and other dangers ;—for females there are also confinements, and other like causes ; so that the first years after the purchase or foundation of the annuity are the least dangerous, which is a considerable advantage for the annuitant, particularly if we reflect, as I have above stated, that one of the said first years may, as regards the original price of purchase, balance a great number of the subsequent years.

Finally, and in the fourth place, . . . so that the annuitant or his heirs were to receive 46 more entire half-years of annuity after the expiration of the term of the aforesaid 77 years, this could not, however, increase the price of the life annuity . . . by more than 14½ stuyvers of the same capital ; and even if the annuitant could be assured that his heirs were, after the expiration of the above 100 years, to enjoy the life annuity from half-year to half-year, and that perpetually the value of the capital at the time of first purchase would not thereby be increased by ten stuyvers.

In consequence of all these reasons, we may assume it as established and demonstrated, that the value of a life annuity in proportion to the redeemable annuity at 25 years' purchase, is really not below, but certainly above, 16 years' purchase ; so that a person wishing to purchase a life annuity in such proportion, and according to its real value, ought to pay more than 16 florins for 1 florin of annuity p.a.

Regarding the rate of int. employed in the calculation, he thus sagaciously observes :

Besides the consideration that this calculation has been made on the principle of a deduction of 4 p.c. p.a. at compound interest, and this with such benefit to the purchaser of the life annuity that he would realize not only the interest p.a., but also without any intermission interest upon interest at 4 p.c. p.a., as though he could always thus advantageously make use of his money in purchase of annuity ; it is constant that one could not always find such opportunity of investing it, and that one is sometimes obliged to let it lie fallow for some time, and often to lend it at a materially smaller interest, to provide against a greater loss.

Finally :

Even besides this, as the capital of life annuities is not subject to taxation, nor to a reduction to a lower amount of annuity or interest, it follows, that if the blessing of the Almighty continue to be vouchsafed to this country, we may consider the life annuity as much more advantageous to the annuitant than the redeemable annuity. As may manifestly be judged by the example of foregoing times—by reflecting in fact that My Lords the States of Holland and West Friesland have in the course of a few years not only increased the charge for life annuities from 11 years' purchase to 12 years' purchase, and from 12 years' purchase to 14 years' purchase, but that these annuities *have been sold, even in the present century, first at 6 years' purchase, then at 7 and at 8, and that the majority of all life annuities now current, and at the country's expense, were obtained at 9 years' purchase* ; which annuities by reason of the successive reductions of the rate of interest from 6½ to 5 per cent., and then from 5 per cent. to 4 per cent., produce to the annuitants an actual profit of nearly one-half of such half-year's payment, and of more than one-half in the case of those annuities which were obtained at 8 years' purchase or under.

The Burgomaster of Holland and West Friesland in 1671, when the preceding report was made, was Herr J. Hudde, and he added a certificate to the report, which has caused some speculation : first, as to whether he understood the question sufficiently to impart any value to his certificate ; and next, if he had any reservation as to "some fault of a figure" which does not appear upon the surface : for there *was* a fault of a figure in the addition. Both points have more recently been decided, by competent authorities, in Hudde's favour.

Certificate : I the undersigned declare, that having attentively read and examined, at the request of my Lord the Grand Pensionary of Holland and West Friesland, the above propositions, and the conclusions thence derived, for finding the value of a life annuity compared with that of a redeemable annuity at 4 p.c. p.a. I am of opinion that the method employed for that effect is perfectly discovered, and that the conclusion made therefrom (namely that the purchaser of a life annuity still makes a gain in stipulating for 1 florin of annuity p.a. for 16 florins of capital) depends upon solid and incontestable mathematical foundations, provided that some fault of a figure has not been involuntarily made in the calculation of the Table, or in the copy, and addition of the items, which is an ordinary and well-known computation, but which I have not made.—*J. Hudde.*

The researches of Mr. Hendriks have estab. two facts of importance : first : that De Wit and Hudde were jointly prosecuting these inquiries and extending the calculations to two joint lives, and even three, four, five, or more lives ; and next, that their attention *was* directed to the subject in consequence of the then recent discoveries in the doctrine of probability by Pascal and Fermat. We have, however, the authority of Mr. Milne for

stating that De Wit's treatise was very little known in this country, and had "no sensible influence on the subsequent progress of the science." The reasons for this will appear in our notice of De Wit. Leibnitz appears to have been one of the first who drew the attention of Europe to this report of De Wit's; but it was Mr. Fredk. Hendriks who discovered the document itself.

In 1674 there was issued in Lond. a scheme of Tontine annuities, of which the following is an outline: "An advertisement and demonstration concerning the improvement of moneys to the great benefit and advantage of all persons of what nation, sex, age, degree, or quality soever, willing to advance any sum or sums, according to the method herein-after mentioned, propounded to the Right Honorable the Lord Maior, Aldermen and Commons in Common Council assembled." The sum to be advanced was not less than £20 upon one life; but several advances might be made upon the same life. The prospectus further said: "This extraordinary gain being not only lawful, but very advantageous, there can be no other way proposed whereby, in laying out so small a sum as £20, there can be produced so great an increase as by survivorship will most certainly accrue to many persons, and especially to the longest liver of this rank." We, however, hear no more of the project.

In 1677 there was pub. by Michael Dary: *Interest Epitomized, both Compound and Simple*: "very useful for every one that lendeth or borroweth; and for purchasing and selling annuities or pensions, and leases in reversion. Whereunto is added, a short appendix for the solution of adfected equations in numbers by approachment: performed by logarithms."

In 1681, a paper by Adam Martindale was published in the *Phil. Trans.*, under the following title: *Twelve Problems in Compound Interest and Annuities resolved*.

The following, taken from a work on church and college leases, pub. at Cambridge in 1686, *Tables for renewing of leases and purchasing lives* [LEASES], gives a curious indication of the conjectural methods then commonly adopted in life valuations, and also confirms what we have already seen regarding the small values put upon lives:

The way of purchasing by lives was commonly to reckon one life as a lease of seven years, two lives as a lease of fourteen years; and three lives as a lease of twenty-one years. But this way seeming unequal, there is another way, which is more agreeable to reason; and it is this, viz., for every life to decrease one year; as, if one life be reckoned as a lease for ten years, then two will be as a lease for nineteen, and three as a lease for twenty-seven years, etc. So if you reckon one life as a lease of nine years, then two will be a lease of seventeen, three as a lease for twenty-four, etc. So if one single life be reckoned as a lease of twelve years, then two will be as a lease of 23, three as a lease of 33 years, etc.

After some further exemplifications, there follows a Table which (as Mr. Farren has already pointed out) appears to constitute *the first species of life annuity table offered for public use in Gl. Brit.* The following is the Table, and the necessary explanation thereto:

A Table for the purchasing of Lives.

What they are worth at £7 p.c.						What they are worth at £7 p.c.						What they are worth at £6 p.c.					
Number of Lives.	Number of years.	Years.	Quarters.	Months.	Decimal parts.	Number of Lives.	Number of years.	Years.	Quarters.	Months.	Decimal parts.	Number of Lives.	Number of years.	Years.	Quarters.	Months.	Decimal parts.
1	10	7	0	0	3	1	9	6	2	0	2	1	12	8	1	1	6
2	19	10	1	1	0	2	17	9	3	0	1	2	23	12	1	0	6
3	27	11	3	2	6	3	24	11	1	2	6	3	33	14	1	2	6
4	34	12	3	1	1	4	30	12	1	1	8	4	42	15	0	2	7
5	40	13	1	0	9	5	35	12	3	2	2	5	50	15	2	2	7
6	45	13	2	1	2	6	39	13	1	0	1	6	57	16	0	0	8
7	49	13	3	0	2	7	42	13	1	2	4	7	63	16	0	2	8
8	52	13	3	1	3	8	44	13	2	0	6	8	68	16	1	1	2
9	54	13	3	1	6	9	45	13	2	1	2	9	72	16	1	2	0

The repetition of 7 p.c. (2nd division of Table) may on first perusal appear merely a misprint, but on considering the fanciful construction of the Table, the cause of the duplicature will become apparent. In the first division one life is assumed as equal in duration to 10 years, in the second, 9 years are assigned to it: consequently the two divisions, though in connexion with similar rates of int., represent different values. It seems scarcely possible to afford to the modern reader a more obvious example of the inconsistencies of the methods formerly prevailing.—*Farren*.

The authorship of this work was very generally and for some years attributed to Sir Isaac Newton, no doubt from the fact of his having given a certificate of his belief in the accuracy of its Tables. It is now known to have been written by one Mabbot, of King's College, Cambridge.

The most unpractised reader will at once perceive that until distinctions of age were

recognized as influencing the relative annuity values, all life estimates were too imaginary and inconsistent to be even worthy of the name of calculated results.—*Farren*.

In 1692 the first attempt was made by the English Government to raise money by means of life annuities ; and hence there arises the first mention of life annuities in the English Statute book. This was by 4 Wm. & Mary, c. 3, known as the " Million Act." Its object was to raise one million sterling, "to carry on the war against France," by means of tontine annuities, for the int. upon which £100,000 p.a. was to be set apart until A.D. 1700, and then £70,000, but in the event of the entire million not being so subscribed by a given date, those who did sub. were to have, in lieu of the tontine advantages, an annuity of £14 in respect of every £100 subs., during the remainder of their own or their nominee's lives. There were no provisions or restrictions as to age. Even on these terms however, only £881,493 12s. 2d. could be raised.

Great efforts were made to float this loan, and there was pub., apparently by authority, the following Table predicting the course of death of the entire 10,000 nominees. A copy of the table still exists in the British Museum ; and we think it sufficiently remarkable to be given here entire, with the following explanation, which, in the original, is given at the foot of the Table :

This Table designed for the encouragement of contributors to advance monies upon the funds and terms expressed in the *Act of Parl.* newly passed, for granting to their Majesties certain rates and duties of excise upon *Beer, Ale*, etc., and being applicable to the first proposal therein mentioned, upon terms of yearly payments during life, with advantage of survivorship, was calculated upon this supposition, that the whole sum of *Ten Hundred Thousand Pounds* may be advanced, and consequently as many nominees as there are shares or £100 advanced, viz. 10,000. The following example will show the use of the table. Look in the left-hand column for the number of years desired. Suppose 22 ; you will find in the columns answerable to it that at the end of 22 years, there are 5034 nominees dead, and 4966 living, and that each contributor (whose nominee is then alive) will receive that year for interest £14 1s. for each share or £100 by him advanced.

A table shewing how many out of 10,000 *Lives* or *Nominees* will be likely to die in any number of years proposed during the term of 99 years, and the yearly interest due, etc.

Year of our Lord.	Number of Years.	Persons dead after a Term.	Persons alive after a Term.	Yearly interest due to each contributor for £100 advance.	
				£	s.
1694	1	282	9718	10	6
1695	2	558	9442	10	12
1696	3	830	9170	10	18
1697	4	1096	8904	11	4
1698	5	1356	8644	11	11
1699	6	1610	8390	11	18
1700	7	1860	8140	12	5
1701	8	2106	7894	8	17
1702	9	2346	7654	9	2
1703	10	2580	7420	9	8
1704	11	2810	7190	9	14
1705	12	3036	6964	10	1
1706	13	3256	6744	10	7
1707	14	3472	6528	10	14
1708	15	3682	6318	11	1
1709	16	3890	6110	11	9
1710	17	4092	5908	11	17
1711	18	4288	5712	12	5
1712	19	4482	5518	12	13
1713	20	4670	5330	13	2
1714	21	4854	5146	13	12
1715	22	5034	4966	14	1
1716	23	5208	4792	14	12
1717	24	5380	4620	15	3
1718	25	5546	4454	15	14
1719	26	5710	4290	16	6
1720	27	5868	4132	16	18
1721	28	6024	3976	17	11
1722	29	6174	3826	18	5
1723	30	6322	3678	19	0
1724	31	6464	3536	19	15
1725	32	6604	3396	20	12

Year of our Lord.	Number of Years.	Persons dead after a Term.	Persons alive after a Term.	Yearly interest due to each contributor for £100 advance.	
1726	33	6738	3262	21	9
1727	34	6870	3130	22	7
1728	35	6997	3003	23	6
1729	36	7121	2879	24	6
1730	37	7242	2758	25	7
1731	38	7358	2642	26	10
1732	39	7472	2528	27	14
1733	40	7582	2418	28	19
1734	41	7688	2312	30	5
1735	42	7792	2208	31	14
1736	43	7892	2108	33	4
1737	44	7988	2012	34	6
1738	45	8082	1918	36	10
1739	46	8174	1826	38	6
1740	47	8262	1738	40	5
1741	48	8346	1654	42	8
1742	49	8428	1752	44	13
1743	50	8508	1492	47	0
1744	51	8584	1416	49	9
1745	52	8658	1342	52	3
1746	53	8728	1272	55	0
1747	54	8796	1204	58	3
1748	55	8862	1138	61	10
1749	56	8926	1074	65	3
1750	57	8988	1012	69	3
1751	58	9046	954	73	7
1752	59	9102	898	77	19
1753	60	9156	844	82	19
1754	61	9208	792	88	7
1755	62	9258	742	94	6
1756	63	9306	694	100	17
1757	64	9352	648	108	0
1758	65	9396	604	115	18
1759	66	9438	562	124	11
1760	67	9478	522	134	2
1761	68	9516	484	144	12
1762	69	9552	448	156	5
1763	70	9586	414	169	1
1764	71	9618	382	183	15
1765	72	9648	352	198	17
1766	73	9677	323	216	14
1767	74	9704	296	236	10
1768	75	9730	270	259	5
1769	76	9755	245	285	14
1770	77	9778	222	315	6
1771	78	9800	200	350	0
1772	79	9820	180	388	18
1773	80	9838	162	432	2
1774	81	9855	145	482	15
1775	82	9871	129	542	12
1776	83	9886	114	614	0
1777	84	9900	100	700	0
1778	85	9913	87	804	12
1779	86	9925	75	933	6
1780	87	9936	64	1093	15

Year of our Lord.	Number of Years.	Persons dead after a Term.	Persons alive after a Term.	Yearly interest due to each contributor for £100 advance.	
1781	88	9946	54	1296	0
1782	89	9955	45	1555	11
1783	90	9963	37	1891	18
1784	91	9970	30	2333	6
1785	92	9976	24	2916	13
1786	93	9981	19	3684	4
1787	94	9986	14	5000	0
1788	95	9990	10	7000	0
1789	96	9993	7	10,000	0
1790	97	9996	4	17,500	0
1791	98	9998	2	35,000	0
1792	99	9999	1	70,000	0

The first consideration which strikes us in reference to this Table is, *upon what data was it founded?* the next, who supplied it? Was it Halley? It comes suspiciously near to the advent of his Table, as we shall presently see. If not, it can no longer be maintained that he invented the first life table. Or is the preceding Table purely conjectural? Its application was certainly conjectural, inasmuch as the ages of the nominees not being restricted in any manner, could not be known. But then, as we have shown ages had not at this period been taken into account. Halley, however, knew the necessity and the value of the element of age!

We have seen that the entire million was not sub. under the Act of 1692; accordingly in 1693 another Act was passed—5 Wm. & Mary c. 5—for granting life annuities also at the rate of 14 p.c. p.a. on the sum of £118,506 5s. 10d. required to make up the orig. amount. This granting of life annu. at 14 p.c. was virtually estimating the value of an annu. on a single life at 7 years' purchase. But the *actual experience* of this batch of annu. has been tested by means of the investigations of Mr. John Finlaison [see 1829], and was found to have ranged from 17 years' purchase at age 10, down to 4½ years' purchase at age 75.

In 1693 we reach the name of Dr. Halley, who (subject to the preceding query) constructed *the first mort. Table*, and thus placed the valuation of life annuities upon a scientific basis. He read a paper before the Royal Society: *An estimate of the degrees of mort. of mankind, drawn from curious tables of the births and funerals at the city of Breslaw, with an attempt to ascertain the price of annuities upon lives*; wherein he showed how the prob. of life and death, and the values of annu. and assu. on lives, might be determined by the aid of Mort. Tables. He states that till then all such matters had been dealt in by *imaginary valuation*!

Dr. Halley having defined the chances of life, proceeds to illustrate the application of the table to the determination of the value of life annu., and apparently selected 6 p.c. int. as the rate most current in his own day.

He first indirectly advances, that the worth of an annuity not dependent upon life would be represented by adding together the several discounted values of the successive payments. But in a life annuity, as each payment would only be claimable upon the persons living to the respective dates, so each payment would prospectively be worth such a proportion only of the discounted value as there was a proportionate chance of the persons living to the date in question. Now the chances of a person of any particular age living to the respective dates of payment were easily determinable, as already mentioned, by considering the relative number of yearly survivors, indicated by the table of mort.

The value of the life annuity was therefore dependent: *firstly*, upon deriving from int. tables or calculations, the discounted value of each yearly payment; and, *secondly*, upon taking such a proportion only of each discounted value as there might be a proportionate chance of the payment being respectively claimed. Such separately reduced values being added together, would then constitute the total value of the life annuity.

This method of valuing life annuities by ascertaining the value of each future payment separately is obviously and demonstrably true in the present day, as in Dr. Halley's own time; but inasmuch as the labour of such subdivision for every age would be necessarily very great, the reader will not be surprised to learn that less elaborate methods have since been discovered. Dr. Halley himself remarked upon the operose requirements of his formula, but very frankly owned that after several trials he had not succeeded in devising any less laborious method. He had, however, the perseverance to calculate the results for every fifth age as embodied in the accompanying table, which, from its constituting the

TABLE—6 p.c.

Age.	Years' Purchase.	Age.	Years' Purchase.
1	10.28	40	10.57
5	13.40	45	9.91
10	13.44	50	9.21
15	13.33	55	8.51
20	12.78	60	7.60
25	12.27	65	6.54
30	11.72	70	5.32
35	11.12		

first annuity table for different ages, seems no less interesting as the primary step in the art of life-finance, than the preceding table was in that of life-measurement.

Dr. Halley, in connexion with this Table, observes :

This shows the great advantage of putting money into the present fund lately granted to their Majesties, giving 14 p.c. p.a., or at the rate of 7 years' purchase for a life; when young lives, at the usual rate of int., are worth above 13 years' purchase. It shows likewise the advantage of young lives over those in years; a life of ten years being almost worth 13½ years' purchase, whereas one of 35 is worth but 11.

This appears to us to lead to the inference that Halley may have been concerned in the preparation of the preceding scheme.

Dr. Halley then considers the chances appertaining to two or more lives, and shows that the same principle of investigation already applied to single lives should be extended to the more compound cases; for the separate yearly values being ascertained and added together, would similarly constitute the total value of such annuities; care, however, being taken that each yearly value was previously compounded of the chances of the different lives under consideration, according to the terms of the particular case to be solved.

—Farren.

In 1693 Leybourn's *Panarithmologia* was pub., and it contained tables of annuity values, and of compound int., with much other interesting information concerning marine ins., usury, leases, etc., but no mention is made of life annu.

Some money was borrowed in 1694 on annu. for lives, under the authority of 5 Wm. & Mary, c. 20. The terms were 14 p.c. for one life, 12 p.c. for two lives, and 10 p.c. for three. "Natives or foreigners" might contribute. Such terms were in the highest degree extravagant; particularly *as no attention was paid to difference of ages*. Assuming no frauds had been committed on the Government, these terms yielded the lender 10 p.c. in the case of the two lives, and 9 p.c. in the case of three. But there is reason to believe that serious frauds were committed. The amount of the annuities at first was about £22,800. In 1762 (68 years afterwards) they had only been reduced by deaths to £9215; while 20 years later (1782) they remained at £8027. See 1718.

It was in the preceding Act that mention is first made of annu. granted upon more than one life.

In 1694, also, by 5 & 6 Wm. & Mary, c. 5—*An Act to enable such persons as have estates in life annu. payable by several former Acts therein mentioned, to purchase or obtain further or more certain interests in such annuities; and in default thereof for admitting other persons to purchase or obtain the same, for raising moneys for carrying on the War against France*—it was provided that the person who had purchased annu. under the Acts of 1692–3, might exchange their life annu. for others of 96 years certain, upon paying into the Exchequer £63 in add. to the £100 originally paid.

It is thus seen that the difference between 14 p.c. for life, and 14 p.c. for 96 years, was sold for £63, or 4½ years' purchase. In other words an annu. of £50 could be secured for 99 years by payment of £675. Such an annu. is now worth £1500, or considerably more than double. But Adam Smith, reviewing the transaction and the period, says that "such was the supposed instability of the Government that even these terms procured few purchasers."

By the 7 & 8 Wm. 3, c. 2 (1695), the opportunity of embracing the advantages of the last-named Act were extended to a longer period; and for 5 years' purchase, or £70, persons not such original purchasers might obtain an annuity of £14 for 96 years.

The purchasers appear to have well understood their own interests: the instability of Government would affect life annu. as much as long annu.; but the life annu. at 7 years' purchase was by far the best bargain, for the int. of money being 6 p.c., the life annu. was worth, at Halley's estimate, 13 years' purchase (13¼ at the age of 10), and an annu. for 96 years was worth only 16⅔ years' purchase. The value of a life annu. of £100 was £1300, which was obtained for £714; and the new offer to such a purchaser was, that, if he would advance £450 more, he should obtain an annu. worth £1660; by accepting the offer he would have gained £496 on £1164; by rejecting it, his profit was £586 on £714.

These schemes of the Government drew much attention to the subject of life annu., and induced several projects to be set on foot on very fallacious foundations. We must notice several of these.

On the 24th Oct. 1695, a scheme was set on foot for making a fund for granting Annuities for Lives, etc. The same was proposed to be worked in connexion with a then existing inst. called the "Million Bank." In the proposals it was provided that any person might subscribe money or land for granting annuities for terms of years, or for 1, 2, or 3 lives, at 10, 12, and 14 years' purchase, renewable at any time for a reasonable fine. The money subscribers were to have 6 p.c. p.a. for their money; and the subscribers for land were to be accommodated with money at 3 p.c. p.a., and the remainder of the profit to be divided between the land and the money. Any person might subscribe to purchase annuities at the aforesaid rates, and the subscribers of money might, if they thought fit, transfer the same to the account of annuities for a term of years, or for 1, 2, or 3 lives, as they liked best. But that the money or what is purchased therewith should in the first

place be liable to pay the said annuities, and in case they fell short, the land to be charged, with liberty given to the subscribers to revoke up to 4th Nov. then following.

Of £120,000 to be paid up before 9th Nov., £100,000 was to be laid out in purchasing £20,000 p.a. in reversions "on the lives in the Exchequer;" and the remaining £20,000 to buy about £3000 p.a. in lottery tickets for 15 years: which £20,000 p.a. in Reversion and the £3000 p.a. in possession for 15 years, is to be backt with £20,000 p.a. land, whereupon to grant annuities for one, two, or three lives, to the value of £20,000 p.a.; which at 11 years' purchase (the medium of the rates proposed) will come to £220,000, with £120,000 of which they proposed to purchase £17,000 p.a. more of lottery tickets, to make the first £3000 p.a. £20,000 p.a. in possession; and the remaining £100,000 was to be lent to the land subscribers at 3 p.c. p.a., and the remainder of the profits was to be divided, viz., two-thirds to the subscribers of the £120,000 in money and one-third to the subscribers of £400,000 value in land, being £20,000 p.a. at 20 years' purchase; which (they say) by a modest computation may make 16 p.c. p.a. to the money, and near 30 p.a. on every £100 p.a. in land. And that the said fund might not fail, one-fifth part of the profits should during the 15 years be annually laid out to purchase something to answer those lives that may happen to be then left, of those that the reversions were purchased from the Exchequer.

It was, in a word, one of those complicated schemes of this period devised to evade the usury laws, and which broke down by reason of those very complications.

In 1698 an annuity project was set up by the Mercers Company, mainly at the instigation of Dr. Assheton. The scheme was for granting life annuities to the widows of the members at the rate of £30 for every £100 paid down by the member or subscriber. A scale was formed by which married men under 30 were allowed to subscribe £100; under 40, not more than £500; and under 60, they were limited to 300. A full history of this project will be given under MERCERS COMPANY.

In 1699 or 1700 another similar institution was formed, under the name of *The Society of Assurances for Widows and Orphans*, which has long since passed away. There were probably several others.

The following lines are from the *Postboy* of 3rd Jan., 1698, and clearly relate to the annuity and other bubbles of the period.

We have methods wholly new,
Strange, late invented, ways to thrive,
To make men pay for what they give,
To get the Rents into our hands
Of their hereditary lands,
And out of what does thence arise,

To make 'em buy *annuities*.
We've mathematic combination
To cheat folks by plain demonstration,
Which shall be fairly manag'd too—
The undertaker knows not how.

In 1698 John Ward, of Chester, pub. a compendium of Algebra, and thereto was an Appendix concerning compound int. and *annuities*. But as the same writer goes into the subject more at large in another work, pub. 1710, we shall defer our analysis of his views until we arrive at that date.

In 1703 a money Act was passed—2 & 3 Anne, c. 3—in which life annu. were granted upon a similar plan to that in the previous Acts, but upon less favourable terms to the purchasers. In place of seven, eight and a half, and ten years' purchase, the prices were for one life at the rate of nine years' purchase, or for two lives at the rate of eleven years' purchase, or for three lives at the rate of twelve years' purchase (sec. 10). Annu. for 99 years were to be bought at 15 years' purchase. All the annu. granted under this Act were ultimately taken up by the South Sea Co.

In 1704 by 3 & 4 Anne, c. 2—*An Act for raising monies by sale of several annu. for carrying on the present war*—"natives or foreigners" were entitled to exchange any life annu. purchased under the preceding Act into an annuity for 99 years certain, on payment of 6 years' add. purchase; or in case of an annu. orig. granted for two lives, and where one life had dropped, for 4 years' purchase; or in case of three lives for 3 years' purchase (sec. 3).

This persistence in imaginary estimates, notwithstanding that Dr. Halley had ten years previously illustrated the importance of distinction as to age, etc., portrays that the new doctrine of life-valuation was as yet but little appreciated, being prob. overlooked, or deemed still more fanciful than even the ordinary methods then in use.—*Farren*.

In 1706 the *Amicable So. for Perpetual Assu.* obtained its charter, under which there was power to grant life annu.

About the year 1707 a curious project was set on foot under the title of *The Proprietors of the Traders Exchange House*. The projector was Charles Povey, the founder of the *Sun Fire Office*. It was part of the scheme that at the end of the first five years, 50 of the poorest members were to receive an annu. of £10 for life; and after another five years, fifty others. [PROPRIETORS OF TRADERS EXCHANGE HOUSE.]

In this year was first pub. *Smart's Interest Tables*, of which we shall have to speak hereafter (see 1726).

At the close of 1709 a scheme was announced, which partook in some respects of the nature of a Tontine. Its preliminary announcement was headed: "The lucky 70, or the longest lives take all." But the more matured project took the form following:

A proposal for annu. for life, with the benefit of survivorship, such as the purses of the generality of

the people may be able to compass issuing out of the annu. granted by Parl. for a term of 99 years, and lottery annuities for 32 years, and the reversions of annu. Hence great profits will arise to such as shall live long, and an immediate income to all the subs. tax free, and payable half-yearly during the lives of their respective nominees. The least sum to be subs. is £10, but any contributor or such person as shall be employed by such contributor, may subscribe for as many sums of £10 as he or she shall think fit. Subs. are taken from 2 till 5 in the afternoon, at Haberdashers Hall, in Maiden Lane, near Wood Street, Lond., where may be seen the art. of agreements, the method in disposing of the subs. monies, and the allowances to the subs. of the first £20,000, and other particulars relating to the said proposal. Note—There are four subscription books marked A. B. C. D., that is to say, A. for nominees of any age; B. for nominees not under 20; C. for nominees not under 30; and D. for nominees not under 40 years of age.

This was, we believe, the first instance of any classification of ages being introduced. What was the fate of the project we do not learn. It is not surprising that outside speculators saw that money was to be made out of the Government annu. projects. But as every one could buy from the Government direct, there was not much need for the founding a special asso.

In 1710 there was a lottery drawn in Lond. consisting of 150,000 tickets valued at £10 each: every ticket being entitled to an *annuity* for 32 years, the blanks to 14s. p.a.; and the prizes to various annu. ranging from £5 to £1000.

The annuity-mongers of this period afforded some points for the satirists. Steele selects a character whom he speaks of as Africanus:

One who has long been conversant in bartering; who knowing when stocks are lowest it is the time to buy, therefore with much prudence and tranquillity thinks it the time to purchase an annu. for life. Again: Sir Thomas added he would have bought twelve shillings a year of him, but that he feared there was some trick in it, and believed him dead already!

In 1710 was pub. by John Ward, a little book called *Clavis Usuræ*: or a Key to Interest, etc., which confirms in a very marked manner some of the preceding details:

The way generally used in buying of annu. or letting of leases for lives, is only by an imaginary valuation grounded upon custom, and not upon any consideration that is had to the age of the persons whose lives are to be inserted in the lease, etc. 'Tis true indeed that there can be no certain rules prescribed for their true valuation, because the lives of all mankind are uncertain; and 'tis possible and daily seen that a young man may die before one of greater age. But yet there is a greater prob. of a young man's living longer than an old one; and not only so, but there's a proportional likelihood of the length of men's lives according to their different degrees of age. The which being duly considered, must needs be found of good use in estimating the values of annu. or leases for lives, much better than by a mere guessing only as usual; and that such a proportional likelihood is worth the consideration will appear from what follows.

He then recites Sir Wm. Petty's Use of Duplicate Proportion, afterwards adding by way of comment:

Thus you have a learned gentleman's opinion concerning the likelihood of the length of men's lives according to rules of duplicate proportion, which was a very ingenious thought of his. But I must beg pardon that I cannot agree with him in that part of it which asserts that 21 years is the age for whole life or lease is most valuable. For, although 'tis true that according to our law a man is said to be at his perfect or full age as to the enjoyment of an estate, or managing his affairs without a guardian, etc., yet I shall rather adhere to the close of his discourse wherein he says that he found that if the sum of all ages of the 330 souls (in a certain parish) being divided by their number, made the quotient between 15 and 16. Whence I take 16 to be the age for whose life a lease is most valuable.

Upon that supposition he calculated the following table, "according to the aforesaid rules of Duplicate Proportion":

This table (he says) shows by inspection the value of every five years of any single life from the birth to 71 years old. Supposing that any annuity or lease, etc., is really worth nine years' purchase for one life, which is according to the rate that the annuities settled by a late Act of Parl. for lives were valued at, and from thence the rest are computed.

He then notices Dr. Halley's estimate, and after inserting the relative table of annuities, adds:

This table being of the same nature with that in page 107 (*i.e.* the table above), there needs no other explanation or example to show its use, than what has been already said about that table: only here I must again beg leave to give my opinion about the *difference* of the *proportions* in the two tables, which is, that as the table in page 107 may not be thought a sufficient guide to be depended upon in estimating the length of men's lives, etc., because it's only deduced from the bare rules of art, viz., that of duplicate proportion; so on the other hand, I doubt the estimates of the value of any annu. taken from this table (*i.e.* Dr. Halley's), will be found too great in this country (*viz.* in England), which I much fear hath not so good or salubrious an air as that at the city of Breslaw, from whence these calculations are drawn. *But if in imitation hereof, the curious in other cities and large towns would attempt something of the same nature; then without all doubt this method of estimating the prob. of the length of men's lives would prove the best, and become more universally useful than can be expected from this one single instance, more especially if such observations were continued for any considerable time, as 20 or 30 years successively.*—p. 111.

Age.	Years' Purchase.
1	2.50
6	5.51
11	7.46
16	9.00
21	7.85
26	7.20
31	6.46
36	6.00
41	5.62
46	5.13
51	5.04
56	4.84
61	4.60
66	4.43
71	4.27

The above quotations from a little interest-book pub. in 1710 sufficiently illustrate that however much the subject of distinctive life valuations might be generally overlooked, yet that it was gradually attracting the attention of occasional writers.—*Farren.*

In 1711 Mr. Edward Hatton pub. his *Index of Interest*, and therein was contained: Tables showing by inspection the present worth of annuities, and the purchase thereof. Tables of the amount and present worth of any sum of money and of annuities to 61 years, and rules to apply them for 122 years. "Likewise easie rules for valuation of

1, 2, and 3 lives, etc., etc." This was the first attempt at popularizing the arithmetic of Life annuities—the first of many hundreds.

In the same year Mr. Thomas Langham pub. Tables of Simple and Compound Int. and therein was contained : Tables "whereby the amount or present value of any sum of money or any annuity, or lease, either in possession or reversion, from 1 year to 61, at the several rates of 3, 4, 5, 6, 7, 8, 9, and 10 p.c., is exactly calculated to the hundreth part of a penny ;" but not a word concerning life annuities.

In the *Post-Boy* of 7th Feb., 1712, there was the following, by way of adv. : "If any person is willing to grant an annuity for Life upon good security, he may find one that has £2000 to lay out in that way. Enquire of Mr. Collins, Bookseller, at the Black Boy, over against St. Dunstons Church," etc.

In 1713 the legal rate of int. was reduced from 6 to 5 p.c., at which it remained from that period down to the abolition of the Usury Laws in 1854.

We now approach a period of more intense speculation in the matter of Life Annu. projects than any which we have yet passed. It was the period of the South Sea scheme, some six years preceding its grand but fatal climax. During this period any and every thing that could be associated with ins. or annu. seemed to find some measure of public support. The igenuity of honest projectors became in the end eclipsed by the daring audacity of bubble-mongers ; but we must advance by gentle stages. Hardly anything in the way of ins. or annu. has been attempted during the century and a half which has since passed that was not in some form introduced or suggested at that period : hence the special attention which we call to it. When Mr. Fred. Hendriks, some years since, approached this period, he made the following judicious and almost necessary preliminary observation (*Assu. Mag.*, vol. iv., p. 129) :

The reader is presumed to be acquainted with the peculiar features of the hist. of the times when these subs. lists, and those of countless other projects, were formed and engrossed the attention and cupidity, not only of the trading classes, but of kings, nobles, clergy, and even of the fair sex, who had their 'Change hours in London, Paris, and Amsterdam. *In the latter city there seems to have been almost as many insurance projects as in London.*

Although we chiefly confine our attention in these pages to annuities on lives, we cannot pass over the fact of annuities being used as a means of raising cap. for the purposes of mercantile enterprise without some notice. The first announcement was the following, under date 5th January, 1714 :

Given gratis at the Oil Annuity Office, against the Upper end of Montague House in Gt. Russel-st., Bloomsbury, a book entitled : An impartial account of the nature, benefit, and design of a new discovery and undertaking to make oil from the fruit of the beech tree. By authority of Her Majesty's Letters-Patents under the Great Seal of Gt. Britain. With answers to all that can possibly be said against it ; and proposals for raising a stock of £20,000 upon annuities for 14 years at 50 p.c. p.a. upon a good and solid security.

On the 5th Jan. it was announced that the book of subscribers was open ; and on the 21st of the same month that the subs. was complete. On the 1st March there appeared very lengthy "proposals" signed "A. Hill," for the formation of a Beech Oil Co., by sale of 5000 shares at £5 5s. a share, which throws some light upon the "good and solid security" held out to the annuitants :

This company is in a pretty considerable state of forwardness, and some hundred shares are bought. . . . Shares will be sold daily till 1st May next : in the mean time, first payment to annuitants will become due Lady-day, amounting to £3750, and shall be discharged out of my own pocket. . . . As to the 30s. p.a. p. share, which must be paid to certain annuitants, I own it would have been more to my satisfaction that there had been no occasion to pay the money : but the sharers will soon find that they have too good a bargain to complain for such a trifle.

Then on the 6th of May, same year, there were issued : Proposals for raising a stock of £100,000 for laying up great quantities of beech-mast for two years, at an int. of 45 p.c. p.a. to the subs. ; and upon a security whereby they will always have in their own hands above ten times the value of the sum they contribute. To which is added a particular account of the nature, benefit, and design of the undertaking.

On the 26th Jan., same year, there appeared the following ; and here the life element is introduced :

This day subs. will be taken for granting annuities (to raise a stock for improving the Fishery) in a method as advertised, and on a fund as good and well secured as ever was proposed, for £20 a year for Life, or 21 years, which shall first end, may be bought for £41, and a greater or lesser annuity in proportion. And that there may be no reason for suspicion or colour of fraud, the purchase-money will not be desired untill the subs. be complete, and directors chosen to receive it, and such as will pay double interest will be allowed 6 or 12 months longer ; but no subs. will be received after 1st day of March next. The office is at the Crown in Fleet-street, near Water-lane, up one pair of stairs.

On the 2nd March, same year, there was another announcement introducing some modifications :

The subs. for raising a stock to improve the fishery by granting annuities of £20 a year for life, or 21 years, which shall first end, being near full, and those of £20 a year for life certain, and of £10 a year for life or 21 years, which shall first end, not above half full ; and several persons declaring the time so short *too* inform their friends : until the last day of the month (if not full sooner) but no longer, annuities for £20 a year for life certain may be bought for £81, and those that remain of £20 a year for life, or 21 years, which shall first end, for £41 ; and £10 a year for £21, etc.

On the 2nd Oct., 1714, there was pub. in Lond. a proposal for settling jointures and granting annu. after the rate of 40 p.c. p.a. The scheme appears to have been built upon the plan of the *Mercers* Co. ; indeed, the prospectus itself announces the fact :

The proposal now offer'd to the world has been maturely consider'd both by the proposers and

several of their friends, by whom they have been encouraged to make this publication. The certainty of the scheme is demonstrably evident, promising no advantage to itself from any precarious methods of gain, and must consequently be secure to subs., nor can it (as is presum'd) receive any disadvantage from the reputation of the proposers. . . . To prove that 40 p.c. is not rashly offer'd by the proposers, or without due consideration, tables are calculated to prove the scheme by the gradual increase and decrease of the annuitants, which being too long to be inserted, may be perused by the curious who will give themselves the time and trouble to examine them.

We, who write more than a century and a half after these proposals were framed and issued, are among the curious referred to, and have even at this remote period taken the pains to find, and given ourselves the time and trouble to examine them. We shall proceed to give the reader the benefit of the result ; but before doing so, we must add the following note to the observations above quoted :

It was intended to have given 50 p.c., the design having been above a year in agitation, but the Parl. having since thought it necessary to reduce the rate of int., 40 p.c. is found to be as much as can reasonably be allowed.

Then there is added :

These proposals may be had gratis at the dwelling-house of the proposers, being four doors above the Rose Tavern, in Cursitor's-alley, fronting Castle-yard, at the White Balconey ; where attendance is daily giv'n to take in subs. between the hours of 9 & 12 and 3 & 6, except on Sundays and holidays.

We are now ready for an abbreviated outline of the actual scheme :

1. That any number of persons, either single or married, in seeming good and perfect health, will be admitted to subs. and pay to the proposers, certain sums of money on their own or the lives of others, at such times, and by such payments as are hereafter mentioned, for the benefit and use of their widows, or other their nominees who shall survive them.

2. That any married man in seeming good and perfect health above the age of 20, and not exceeding 30 years of age, shall, and may have liberty to subs., and pay the sum of one, two, three, four, or five hundred pounds on his own life, for the use of his wife if she should happen to survive him, or to the use of any other his nominee or nominees during the natural life of his said widow.

3. Any married man over 30, and not exceeding 40, in good and perfect health as aforesaid, might subscribe from £100 up to £400 for the like purposes.

4. Any married man between 40 and 50 might subs. up to £300.

5. Above 50 and not exceeding 60, up to £200.

6. That no person shall or will be admitted to subs. for the benefit or use of their widows or any other person or persons, he, she, or they, being above 20 years younger than themselves ; nor will any person be admitted to subs. on the life of his wife, or the life of any other person for their own benefit, if the life so subs. on be above 20 years older than the person to receive benefit therefrom.

7. That any marry'd man may subs. and pay on the life of his wife of any of the ages before mention'd, the sums before nam'd, she being in seeming good health, for the sole use of himself, during his natural life if he should happen to survive her.

8. That any marry'd woman may subscribe, and pay on the life of her husband, of any of the ages before nam'd, he being in seeming good and perfect health, for the sole use of herself, during her natural life, if she should happen to survive him.

9. That any other persons, either marry'd or single, may subs., and pay any of the sums before nam'd, on the life of any person in seeming good and perfect health, and not above 20 years older than themselves, for their own use and benefit, during their natural lives, if they should happen to survive the life subscrib'd on.

10. That the subs. shall be oblig'd to pay no more than £6 5s. p.c. p.a. of the moneys so subscrib'd, and that for no more than one year, unless they think fit to continue it yearly, 'till the whole sum subscrib'd is paid in ; viz., 16 years, if the person's life ins. on should so long continue.

11. That when the sum of £50,000 is subs., that is to say the yearly payments of £3125, the subs. shall be summon'd within six days, to choose and appoint trustees.

12. That within six days after appointment of such trustees, notice should be given to subs. to pay the first payment of £6 5s. to such goldsmith or banker as the said trustees shall approve of. The proposers would then settle a freehold estate of the full value of two-thirds of the moneys so paid in upon the said trustees.

13. That in regard the number of subs. is not limited, the proposers would further settle for every add. sum of £3125 paid in a freehold estate of two-thirds the value.

14. That as soon as such security shall be giv'n, and lands so settl'd, the remaining third part of all monies so paid in shall be vested in the hands of the proposers, to be by them made use of to the best advantage, and to be improv'd by such methods that the same may always be ready to pay the annu. on demand, or to purchase them of such annuitants, who shall think fit to dispose thereof, as after provided. The accounts always open to inspection of subscribers.

15. That the aforesaid things being done, the proposers would give their bonds to pay to the widows or other nominees, after the death of the subscriber, an annu. of 40 p.c. p.a. during their natural lives, according to the following

TABLE—Which shows at sight the charge of each subscriber, and the profit their widows or other surviving nominees will receive in proportion to the number of years which they think fit to continue their payments.

	Principal	£	s.	d.		£	s.	d.	
The First	} year for	6	5	0	} paid by the subscribers to the proposers, their nominees shall receive	2	10	0	} per ann., to be paid them half-yearly during their natural lives.
Second		6	5	0		3	00	0	
Third		6	5	0		7	10	0	
Fourth		6	5	0		10	00	0	
Fifth		6	5	0		12	10	0	
Sixth		6	5	0		15	00	0	
Seventh		6	5	0		17	10	0	
Eighth		6	5	0		20	00	0	
Ninth		6	5	0		22	10	0	
Tenth		6	5	0		25	00	0	
Eleventh		6	5	0		27	10	0	
Twelfth		6	5	0		30	00	0	
Thirteenth		6	5	0		32	10	0	
Fourteenth		6	5	0		35	00	0	
Fifteenth		6	5	0		37	10	0	
Sixteenth		6	5	0		40	00	0	
		£100				Annuity £40			

16. Every person at time of making proposal to express names and ages of their wives, or other nominees.

17. That no soldier that goes to the wars, marine, or sea-faring man, shall be admitted to subs., or pay any money to these proposers, tho' they will not refuse any person that shall, or may, have occasion to travel thorou Gt. Britain, France, or Ireland, or any of the coasts thereof, provided they do not settle their habitations there, that then they will be admitted, and their widows, or nominees be justly paid their annuities.

18. Widows or nominees to give notice of the death of the subscriber within one month, and produce certificate signed by the minister, parish clerk, or churchwardens of the parish where deceased dy'd or was bury'd.

19. That if any person whose life is subscrib'd on shall voluntarily make away his or herself, or by any act of theirs occasion their own death, or by duelling or committing any crime whereby they may be put to death by the laws of the land, that then, and in either of the said cases, their widows or other their nominees shall receive no annuity, but their subscription money shall be repaid them, on delivering up the proposer's bond to be made void and cancell'd.

20. The first payment of annuity to be made on the next feast of the Blessed Virgin Mary, or of St. Michael the Arch-angel, which shall first happen after the decease of the person whose life was subscrib'd on, and due notice thereof giv'n to the proposers, after the rate of 40 p.c. p.a. for all money they shall have paid, and will continue to be so paid half-yearly, during their natural lives, without charge or deduction.

21. If any persons discontinued or neglected to pay their subscriptions in the month of June in every year, such persons should not be admitted to pay the same afterwards on that life, but should only receive their annu. for so much as they had paid in after the rate of 40 p.c.

22. The subs. to give a bond to deliver up the proposers' security for the annu. within one month after death of annuitant.

23. If annuitants could not attend to receive their annu., certificate must be sent, signed by minister and parish clerks or churchwardens, that the annuitant was living, and where.

24. Notice to be given of change of abode of annuitants.

25. The proposers thereby obliged themselves, their heirs, and assigns, for the first five years, in case the person or persons entitl'd to receive these annu. were in seeming sound and perfect health, to purchase the same if requir'd, paying therefor after the rate of 6 years' purchase, provided they are willing to dispose thereof the first year, and to discount what previous half-yearly payments they shall have receiv'd.

26. The subs. to be entitled to new bonds from the proposers for each yearly subscription paid.

27. Every subscriber at the time of making his subs. to pay 1s. in the £, that is to say 6s. for every £6 5s. to be paid by them on the first call, and so on annually during their subscriptions, the like sum of 6s. for the sole use and benefit of the proposers.

The following are some explanations of the scheme which seem important. Thus (without abbreviation)

The following scheme is calculated on a supposition of the death of one person in ten every year, and only for 500 persons, and in the first year's payment; nevertheless, there will remain at the end of 24 years the sum of £1786 16s. 0d., and the annuitants will then be reduced to 35 persons, who will decrease gradually till all are paid off.

It was thought advisable to allow the death of one in ten every year, though it is presum'd 'twill never happen, there being always allow'd by Sir Wm. Petty, and the ingenious Dr. Halley, but one in 30 or 40.

However, 'Twill be more excusable to err in the allowance of a greater number of deaths than the contrary, because most calculations of this nature *have hitherto been too favourable to the projectors, and these proposers are more desirous to ascertain the security of the subs. than their own profit.*

Most virtuous, most noble, and most foolish proposers! Then here follows what they term the SCHEME :

500 subs. at £6 5s. each pay			£	s.				£	s.
Int. at 5 p.c.			3125	00				3147	17
			156	05				157	07
Years.			3281	05	Years.			3305	04
1	25 persons at £2 10s. each receive		62	10	7	91 persons at £2 10s. each receive		227	10
			3218	15				3077	14
	Int.		160	18		Int.		153	17
			3379	13				3231	11
2	46 persons	" "	115	00	8	96 persons	" "	240	00
			3264	13				2991	11
	Int.		163	04		Int.		149	11
			3427	17				3141	02
3	60 persons	" "	150	00	9	99 persons	" "	247	10
			3277	17				2893	12
	Int.		163	17		Int.		144	13
			3441	14				3038	05
4	72 persons	" "	180	00	10	100 persons	" "	250	00
			3261	14				2788	05
	Int.		163	01		Int.		139	08
			3424	15				2927	13
5	85 persons	" "	212	10	11	99 persons	" "	247	10
			3212	05				2680	03
	Int.		160	12		Int.		134	00
			3372	17				2814	03
6	90 persons	" "	225	00	12	96 persons	" "	240	00
			3147	17				2574	03

		£ s.	Years.		£ s.
	Int.	2574 03 128 14	19	67 persons at £2 10s. each receive	2104 06 167 10
Years.		2702 17		Int.	1936 16 96 16
13	92 persons at £2 10s. each receive	230 00			
	Int.	2472 17 123 12	20	60 persons " "	2033 12 150 00
14	90 persons " "	2596 09 225 00		Int.	1883 12 94 03
	Int.	2371 09 118 11	21	54 persons " "	1977 15 135 00
15	87 persons " "	2490 00 217 10		Int.	1842 15 92 02
	Int.	2272 10 113 12	22	49 persons " "	1934 17 122 10
16	84 persons " "	2386 02 210 00		Int.	1812 07 90 12
	Int.	2176 02 108 16	23	44 persons " "	1902 19 110 00
17	80 persons " "	2284 18 200 00		Int.	1792 19 89 12
	Int.	2084 18 104 04	24	39 persons " "	1882 11 97 10
18	74 persons " "	2189 02 185 00		Int.	1785 01 89 05
	Int.	2004 02 100 04	25	35 persons " "	1874 06 87 10
		2104 06		Remainder	1786 16

Note.—Though the scheme is calculated for 500 persons, it will answer as well for any number, as is plain by the rules of proportion, it not requiring a succession of subs. to support it.

There is also a manuscript note in the first page of the prospectus as follows :—

ADVERTISEMENT.—Whereas it has been objected that but two-thirds settled in Lond. is not a sufficient security for performance of the art. of the insuring proposal, It is hereby proposed that (if a majority of the subs. in number and value shall so determine) lands to the whole value of the principal sum of £3125 in the ensuing proposal mentioned shall be settled in trust for the said use, provided the 25th article of this proposal be revoked and made null and void.

By Act 12 Anne (stat. 2), c. 16, it was enacted that the legal rate of int. from and after the 29th Sept., 1714, should be 5 p.c. p.a. ; and all int. taken above that rate was declared to be *usury*, and the contract under which the same was taken to be utterly void. It cannot be doubted that the effect of that measure, as of the previous measures reducing the legal rate of int., was to cause the adoption in an increasing degree of various devices for evasion of the restrictions regarding usury ; and as this evasion involved a risk over and above the ordinary risk of lending, such second risk had to be paid for by the borrower.

The most common device to cover all the risks involved was the sale of a life annu. A person requiring a loan agreed to repay the amount by granting an annu. on his own life, his estate or securities being held as a pledge for the payment of the same. The mort. tables in use before this date were all in favour of the lender ; and the method of such dealings and their object were very generally understood. Even the Government itself, while it was passing these enactments restricting the legal rate of int., was raising money by means of life annu. at very much higher rates !

Mr. M'Culloch, writing of this period in the *Ency. Brit.*, says :

Since the Act of 1714, persons engaged in employments of more than ordinary hazard, or whose character for prudence and punctuality did not stand high, or who could only offer inferior security, were unable to borrow at 5 p.c., and were consequently compelled to resort to a variety of schemes for defeating or evading the enactments in the statute. The most common device was the sale of an annu. Thus supposing any one whose personal credit was indifferent, and who had only the life rent of an estate to give in security, wished to borrow ; he sold an annu. to the lender sufficient to pay the int. stipulated for, which, because of the risks and odium attending such transactions, was always higher than the market rate, and also to pay the prem. necessary to insure payment of the principal at the death of the borrower.

Many curious cases came before the law courts out of these dealings, some of which we shall notice as we proceed.

In 1716 the scheme of fishery annu. (originated in 1714) reappeared under somewhat modified conditions, as follows, under date 17th March.

Until the 14th April next, if not full sooner, fishery annu. of £20 a year for life or 21 years, which shall first end, may be bought for £43 a piece, and in proportion for a greater or a lesser sum. And if any of the annuitants die before double the sum paid for his annu. be repaid, the remainder of the

double and £7 a year for ever (a rent-charge out of land) will be paid after his death for every £43 purchase, and in proportion for any other. The fund is sufficient, and security good, as appears under the hand of several eminent counsellors, as well as by the demonstration and table in the book of articles, price 6d., and by thousands of receipts under the hand of such as for several years have constantly received in proportion to £50 p.c. p.a. gain, to be seen at the Fishery office, up one pair of stairs, at the Crown in Fleet Street (near Water Lane, in Lond.), where £140 p.c. will be paid at demand for fishery annu. claimable.

In 1716 articles were pub. and books laid open in King Street, Cheapside, and at St. Paul's Coffeehouse, to take in subs. to estab. a *Publick Treasury, to grant annu. for life*, and to lend money upon any real security to wholesale dealers, shopkeepers, and others; as also to pay the king's customs for merchants for goods imported; without int., "the Treasury only taking the dis. for prompt payment as allowed by Acts of Parl." Some capital was subs., but the matter remained very much in abeyance until 1720, under which date we shall have occasion to draw special attention to it.

In 1717 the *Mercers Co.* (whose scheme of annu. we have noticed under date 1698) issued the following notice, under date 26th August:

National interest of money is reduced from 6 to 5 p.c. p.a., and whereas the said Co. hath for several years past received subs. to pay £30 p.c. p.a. to the widows of subs. or other persons entitled thereto: The said Co. hath resolved to receive subs. for the future only after the rate of £25 p.c. p.a. for the benefit of the widows of subs. or such other person or persons as shall become entitled thereto, by virtue of any subs. to be made for the time to come, etc. *No one to be admitted after the age of 50.*

On the 17th August, same year, appeared the following:

Whereas, Augustine Woollaston, of Salisbury Court-square, in Fleet-st., Lond., did in the month of Aug. last put out proposals to grant annuities for the term of 14 years payable half yearly, after the rate of £20 p.c. p.a. This is therefore to acquaint all persons that the said Augustine Woollaston will not grant any more annuities after the 26th of this inst. October.

This Mr. Woollaston will be heard of again in these pages.

We have said in reference to the Government annu. project of 1694, that it is supposed that some frauds were committed. We do not find that Mr. Finlaison included in his observations the mort., or supposed mort., of the lives and nominees of this subs.; but still it will be interesting to ascertain how these alleged frauds were committed. The author of the *Political State of Gt. Brit.*, pub. 1718, says: "Before I conclude, I shall present my readers with the following thoughts and remarks on the frauds committed in the fund of survivorship, which have lately been pub. by an ingenious foreigner." He proceeds to do so at a length which precludes us from following him in detail. We must content ourselves with a few passages. Thus:

1. It is highly probable that many frauds are committed by false certificates on the part of some contributors to the fund of survivorship and some pretended nominees thereof, for of 1081 nominees concerned in the said fund, only 329 were supposed to be dead in March last, in 25 years' time, that is to say, one in 80 every year, which is the more incredible if we consider that all the said nominees were then infants or very young children, the greatest part of whom dye (generally speaking) under 30 years of age; besides, it is allowed on all hands that every year one in 32 or 36 dye here in Lond., and one in 40 or 50 in the country and in other parts.

If it be ask'd which way those frauds may be committed, 'tis answered, That the surname of a family being transmitted to all that descend from it in a direct or a collateral line, upon the death of a nominee, one of his brother's cousins, nephews, etc., being in a town where few persons know him but by his surname, may easily take on himself the Christian name of the deceased, and get a certificate of life under it, or else come to London, and receive himself his pretended dividend.

2. Those frauds are very prejudicial to all the true survivors, for we find that the advantage of survivorship hath been very inconsiderable, viz. but £4 p.c. in 25 years' time; and it will be worse for the future, since, as generations increase, a nominee's Christian name will be made common in his family, and consequently the said frauds will become more practicable. By this means there will remain still a great number of pretended nominees 80 years hence, and so no survivor will ever enjoy £1000 a year, or any other considerable yearly income, as was originally proposed, and expected by those that contributed to this fund, rather than to that of 14 p.c.; 2ndly, this is very prejudicial to His Majesty, for the benefit of survivorship will not answer his use, as long as there shall be 7 nominees living, and it is certain there will be a great many more pretended such 80 years hence.

But if those frauds be detected and prevented, as I apprehend they may, all the true nominees will be gone a great deal sooner, it may be in 20 or 30 years; the benefit of survivorship will increase considerably, answer His Majesty's use in a much shorter time, and the fund be quickly redeemed.

3. I have contrived the following methods for putting a stop to those frauds. 1. That hereafter no certificate of life be admitted in the Exchequer but those wherein it shall be certified that the nominee legally made oath that he is truly the person concerned in this fund, and wherein his own hand, age, profession, place of abode, and the names of both his parents shall be set down. I have sent myself many of my own certificates without such descriptions, without subscribing them, and without so much as appearing before those that signed and gave the said certificates of my life to the agent of the contributor whose nominee I am. 2dly. That a list of all the survivors with their description be constantly affixed in the Exchequer, that everybody may examine it, that the same be printed in the *Lond. Gazette*, and in the French Gazette of Amsterdam, once a year or half year, and that a convenient sum be promised as a reward to any body that knowing any nominee's death, shall first give notice of it by an authentick certificate, under the sign and seal of the magistrate of the town where the deceased shall happen to die and be buried.

N.B. A list of the dead nominees is affixed in the Exchequer, but there is no such list of the survivors, which is wrong in my opinion, for it is enacted by Parl. that the frauds committed by the receivers shall be punished, and by forcing them to pay back in a month's time the sum received by them, and upon refusal, three times that sum. But how can any such discovery be made and expected, since no body, nor the nominees, nor the contributors themselves, know who is concerned in that fund and who is not?

3dly. That towards the discharging the small expences of print, reward, etc., His Majesty be graciously pleased to grant some small sum to that purpose; or else that the paymasters of that fund be impowered so much a year upon the total dividend; or else that the present survivors do join together to pay the said charges by a mutual and equal contribution, which may be managed as well as

all the premises by an agent at Lond., empowered by the contributors. All those concerned in this fund are desired to meet in person or by their agents, at Tom's Coffee House, in St. Martin's Lane, Lond., at 4 of the clock in the afternoon, on Monday, the 24th of November next, O. S. 1718, to consider and consult together of this or some other proper methods to prevent those frauds.

It seems necessary to explain, as an indication of the reason why "foreigners" should have taken an interest in these supposed frauds, that many of the subs. offered on such advantageous terms by our Government were largely subs. to by foreigners, to whom special permission so to subs. was given in the various acts. In this particular subs. the foreigners were not numerous! Well, the meeting was held at Tom's Coffee House, and it was agreed to subs. 5s. p. £100, for the purpose of investigation, and a committee was appointed to superintend the same.

The first result of the labours of the committee appears to have been the promulgation of "some new methods to prevent the said frauds," as follows :

1. That a strict inquiry be made into the claims of the present supposed survivors, and that the same be renewed from time to time in the most exact manner.
2. That the ministers and churchwardens grant no certificate of life to any survivor but upon the oath of two witnesses known to them to be men of probity and credit, who shall testify that they are well acquainted with the said survivor's name and surname, and know him to be the son of such a father and mother.
3. That those nominees that are assignees of the contributors and receive themselves their own dividends be obliged to produce to the auditor of the Exchequer, or to a committee appointed of 7 nominees, a certificate in the form above specified that they are indeed such persons as they pretend to be.
4. That the list of the present survivors be sent and delivered to every of them and to the contributors on their life, that they might have a watchful eye one on the other, and inquire who is dead and who is alive still.
5. That as a reward to anybody that first legally proves the death of any nominee, the dividend of the deceased be given him for six months or for a whole year.
6. That the Parliament be petitioned to take this affair into their consideration, and to apply thereto some proper remedy.
7. That a committee of 7 nominees be appointed to take all necessary care and trouble for the performance of the premises.
8. That all concerned in this fund do communicate to the said general meeting the best methods they can imagine to be made use of in the affair.
9. That every one of them, or at least those approving of this design, do contribute what they shall think fit to get a clause of the Parliament, or to put in execution any other measures that shall be thought the most proper; which contribution will be but a trifle to every particular member in so numerous a body.
10. The absent survivors are desired to cause their agents at London to meet at the general meeting, with full power to vote, subscribe, and act in their behalf.
11. and lastly, the agents are desired to send this proposal to their principals.

The next stage in this bus. was the pub. of *New Proofs in the Supposed Frauds in the Survivorships*: a document possessed of so much interest as to deserve our especial attention, quite apart from the reasons which induced its pub. We shall condense wherever possible:

FIRST HEAD. NEW PROOFS OF THE SUPPOSED FRAUDS IN THE SURVIVORSHIPS.

1. There was a fund of survivorship made in Paris 29 years ago at 5 p.c., which dividend did increase by advantage of survivorship, in 29 years' time, to 21 p.c., and proportionally in 25 years' time to 8½, because there is a select committee to enquire into frauds. Now consequently our int. being at 7 p.c., should have increased in proportion to 26½ p.c. instead of 11, which we receive at present. What is the reason of so vast a difference? Do not people dye in England as well as in France, a country so very healthful?

2. The learned and famous Dr. Halley tells us that about a 30th part of the inhabitants of Breslaw, the Capital City of Silesia in Germany, do dye yearly, as Sir William Petty has computed for Lond. (*Philo. Trans.*, p. 610). Capt. John Graunt, Fellow of the Royal Society, tells us in his book of observations on the bills of mort. from Queen Elizabeth to the year 1664, that one in 30 dye in Lond. Again he makes the same computation for Dublin (page 102). Lastly, the same may be made for Paris by the bills of mort. of that city, which you have in pages 144, 146, of the said book. Now by that constant general computation, of 1013 nominees, 33½ should have dy'd every year, which multiply'd by 25 years, makes 843½ dead. Subtract the nom. sup. in March last, dead 294. The difference of these two numbers is, 549½ dead, which multiply'd by £11, being our present dividend, makes £6047½ a year.

3. The said Captain saith (p. 94) that one in 50 dye yearly in the country. He makes his calculation without taking in the fractions, which amounts to 48½. By that computation of 1013 nominees, 21 should have dy'd every year, which, multiply'd by 52 years, makes 525 dead. Subtract the nom. sup. in March last, dead 294. The difference of these two numbers is 231 dead, which multiply'd by £11, being our present dividend, makes £2541 a year.

4. The said Captain saith (p. 84) that of 100 children born in one year, only 25 do survive in 26 years' time. There were in the survivorship 20 nominees of 10 months of age and under, of whom only 5 should in proportion survive at present. But there are supposed still 17 alive. How great a disproportion!

5. Doctor Halley tells us that of 1238 children born yearly in Breslaw, 692 remain alive at full 6 years of age (*Philo. Trans.*, p. 598). Then in proportion 20 nominees born in one year should have been reduced in full 6 years' time to eleven and one-fifth survivors. But there are supposed still 17 alive in 20 years more. How can that be?

6. Captain Graunt saith (p. 84) that of 64 children of full 6 years of age, 25 do survive at 26 years of age, and 16 at 36 years of age. Take a medium between 25 and 16 survivors and between their ages, which medium is 20½ survivors aged 31 years. There was in this fund 342 nominees of 6 years of age and under, of whom in proportion should remain now 109½ survivors, instead of 252 supposed still alive. The difference is 142½.

7. Children of 6 years of age and under are swept away a great deal faster than young men, aged from 16 to 30 and 35 years, by reason of the many dangerous sicknesses and infirmities which infancy is obnoxious to. This is the constant, certain, general, course of nature. But in this case you will see it quite inverted; for young men from 16 to 35 years of age dy'd 7½ in the hundred, faster than children of 6 years of age, which is plain by this calculation:

Nominees of 6 years of age and under	...	...	...	Total 342	...	Dead 90	...	Alive 252
Nominees from 16 to 35 years of age	...	...	...	" 187	...	" 63	...	" 124

The first dy'd 26½ in the hundred, and the second 33½. The difference is 7½. Now consider that it is an easy matter to substitute one living child in the room of another deceased, but it is not so with people of some considerable age, already known in the world.

8. Why was it enacted by Parl. that the original interest at 10 p.c. should be reduced to 7 after the first 7 years? Because the Parl. wisely foresaw that a great many nominees would be infants, in hopes

of being the last survivors, and that according to the course of nature, most part of them would be swept away in 7 years' time, so that the increase of int. by their death would make a compensation for the lowering of it from 10 to 7. If this be not the true reason, let anybody tell me any other.

N.B.—(Prob. by Ed. of *Political State*). It was harder to judge of the constitution of children than that of young men of 16 years of age. Besides no prudence can foresee the casualties which infancy is obnoxious to.

9. A List of the Foreign Nominees :					Total.	Dead.	Alive.
Hamburgers	...	...	...	...	1	1	0
French	...	...	...	...	23	10	13
Of Geneva	...	...	...	...	14	6	8
Germans	...	...	...	...	3	0	3
Dutch	...	...	...	...	4	1	3
Jews	...	...	...	...	15	2	13
					60	20	40
Foreigners...	...	...	...	...	953	274	679
English	...	...	...	...
					1013	294	719

A List of the Nominees living in England and bearing foreign names :					Total.	Dead.	Alive.
French, born of French parents, some in England, some abroad					11	3	8
French, Dutch, Italian—Names whom I take to be children born of English parents					10	1	9
					21	4	17
English for certain					932	270	662
					953	274	679

It appears by that list—1st. That there is but few nominees foreigners, viz. 60, or the 16th part of the whole. 2nd. That all the Hamburgers, and almost one-half of the French, and of those of Geneva, are dead, and I take the reason of it to be this, viz., they living in small cities are all acquainted one with another, so that their death cannot be concealed to their fellow-citizens, nor a living person put in the room of a deceased one. 3rd. That there were but 3 Germans, all alive still, but whose great quality places them above all suspicion of fraud. 4th. Item but 4 Dutch, of whom one is dead. 5th. That few Jews died in proportion to their number, viz., 2 in 15 ; among whom but one child in 5 under 6 years of age, which makes me suspect them guilty of some frauds, very easy to be committed by people in their circumstances.

Then we have a general survey of the entire body of subs. and nominees, and some add. observations thereon.

The orig. list of all the nominees :

		Total.		Dead.		Alive.				
Foreign London Country	}	Nominees of 6 years of age and under	{	21	8	13	}	Dead in the Hundred	{	38
				119	33	86				27
				223	57	166				25
Foreign London Country	}	Nominees above 6 years of age.	{	39	12	27	}	Dead in the Hundred	{	30
				277	86	191				31
				334	98	236				29
				650	196	454				
Young men				363	98	265				
Children										
Total				1013	294	719				

Hence it appears that foreign children of 6 years of age and under, dyed $7\frac{1}{2}$ in the hundred more than foreign nominees above that age, according to the course of nature, which, however, is hard to be remarked in a small number of people, and very easy in a great one. But as I have observed those nominees' death could not be concealed to their fellow-citizens, nor the ministers imposed on that head. The above calculations are made according to the number of nominees, but not of the shares as in the Exchequer, and in my former papers, which occasions some small difference. It is sufficient to have proved that there are frauds. It ought not to be expected that I should yet specify any particular instance, this will depend on the measures that shall be taken for the future. Were the disproportion but small, I should suspect no fraud ; but it is so vast, that for that very reason it is incredible.

SECOND HEAD. SOME OTHER METHODS OF COMMITTING FRAUDS.

1st. Suppose I go to the country, and taking a false name, apply to some minister of a parish, to get from him a certificate of life under that name, he will give it me because he knows nothing to the contrary, or if he will not another will ; the same thing may be practised in London. 2ndly. Suppose I live in London, the Act of Parl. requires not a certificate of life, provided I appear in person at the Exchequer. 3rd. Suppose under pretence of business, sickness, etc., I send my order to the Exchequer by another person with a receipt under my hand, it may sometimes happen that my order will be admitted. 4thly. The same things may happen in case of my death, as well as if I was alive.

N.B.—It is so to one these frauds are not discovered. If they are the defrauder is only obliged to refund the sum he has received, so that the smallness of the penalty with the unlikelihood of a discovery are a great encouragement for committing them.

THIRD HEAD. NEW THOUGHTS ON THE METHODS FOR PREVENTING FRAUDS.

1st. It is proper that an Act, or a clause in an Act of Parl. be obtained for augmenting the penalty on frauds : And it is reasonable to believe that such a clause may be obtained as well in consideration of the justice and equity of the thing itself as with regard to the honour of the legislators, who are concerned to see the true intent of their own act answered. 2ndly. A reward ought to be given to those who shall first give notice of any future death of a nominee. Let the relations of a nominee be honest or not they will chuse rather to get that reward themselves than to leave it to other informers. 3rdly. For the discovery of past frauds a greater encouragement ought to be offered, since such discoveries are more difficult to be made. Admit, therefore, that all or most part of the money that shall be recovered in this case be given to the discoverer, charge being first deducted, the true survivors will find their advantage sufficiently by the future increase of their respective dividends. And in case no more can be recovered from the defrauder, then a convenient reward to be given to the discoverer out of the next dividend, and his name shall be concealed if desired. 4thly. It is very necessary to appoint a committee of nominees to have the care of pub. the list, examining the certifi-

cates, and making proper enquiries, the officers of the Exchequer not having leisure to attend such things. 5thly. Add to this that it is proper that all Nominees, even those who live in Lond., be obliged to produce a certificate of life in the form described in the proposals, and that the other methods therein are also to be made use of.

We hear no more of this remarkable incident : indeed, we may fairly say we have heard enough.

The next scheme brought before the public was that of the *York Buildings Co. for raising Thames Water*, which has a very remarkable hist. of its own. In 1674 Charles II. had granted the projectors a Charter, and in 1691 the Co. became duly incorp., simply for the purpose of supplying the neighbourhood of York Buildings (in the Strand, we believe) with water. We learn from Maitland that "the directors of the same, by purchasing estates, erecting new waterworks, and other pernicious projects, have almost ruined the Corp. However (he continues), their chargeable engines for raising water by fire being laid aside, they continue to work that of horses, which, together with their estates in England and Scotland (of which we shall hear more hereafter), may in time restore the Co.'s affairs."

In the month of March (N.S.), 1719, there appeared in the daily papers the following adv.

The proprietors of the Waterworks in York-buildings intend to dispose of the same at a reasonable price. They are a corp. by Act of Parl. They have the inheritance of the ground whereon their works stand. They have cisterns and works very fit for carrying on the service, and pipes in the street laid on to several tenants, whose rents now amount to above £1600 p.a., and with care and diligence may be improved considerably. Enquire at Mr. Ormes lodgings, at the Waterhouse aforesaid.

On the 16th Oct., same year, the old proprietors agreed to sell their water works and all the appurtenances to Mr. Case Billingsley, Mr. Benjamin Bradley, Mr. James Bradley, Mr. John Hardwar, Mr. Robert Thompson, and Mr. Edward Watts, for the sum of £7000.

On the 27th of the same Oct., there was a general court of the (new) proprietors, at which the following resolution was passed :

Ordered and enacted, that this Co. in order to improve their undertaking of raising the Thames water in York-buildings, for the better supplying the inhabitants of this part of Lond. and Westminster, will forthwith lay open a subs. at Mercers Hall for raising a Joint-stock or Fund of £1,200,000 for purchasing forfeited and other estates in Gt. Britain, *to be a fund for granting annuities for life, and for assuring lives.*

Then appeared the following adv., which developes more of the plan :

The Gov. and Co. of Undertakers for raising Thames Water in York Buildings (who are incorp. for ever by Act of Parl. and impowered to purchase lands and tenements to any value), will on Friday next at Mercers Hall lay open a subs. under their common seal, for raising the sum of £1,200,000 to purchase forfeited and other estates in Gt. Britain, to be a fund for granting annuities for life and assu. lives to all such persons as shall desire the same, paying such valuable considerations as shall be agreed on by the Co. and the persons assured. The proprietors of the *Ass'ce. Stock for Ships and M'ize* will have the preference for 10 days from the 30th inst., to subs. to this stock in proportion to their stock in the corp. of the *Mines Royal*, etc., but no person will be admitted to subs. more than £10,000, nor less than £200 thereto.

Some of the points in this adv. will only be fully comprehended by the reader when we come to the hist. of MARINE INS.

In reference to the estates referred to, it may be briefly stated that in 1717 an Act, 4 Geo. 1, c. 8, had been passed vesting the forfeited estates (resulting from the preceding political troubles) in Gt. Brit. and Ireland in trustees, to be sold for the use of the public. And in this present year 1719 a further Act had been passed—6 Geo. 1, c. 24—for better explaining the nature of the conveyances to be made to the purchasers of the forfeited estates ; and for enabling such corp. as shall purchase any of the said estates *to grant annu. not exceeding the yearly value of the said estates.*

We hope we have now made the programme clear. Certain persons desire to deal in annu. They do not see any direct method of gaining Parl. authority—to obtain which, as we shall hereafter see [LIFE, and MARINE Ins.], many futile attempts were being made at this period. A corp. falls into difficulties. Its whole property and affairs—including its Charter—are to be purchased for £7000. They are purchased by men who know how to turn at least the Charter to account. A new cap. is raised—the cap. was subs., and £10 p. share paid up. These £10 shares realized as much as £305 each a few months later ! A portion of such cap. is employed in purchasing forfeited estates. Parl. declares that any corp. purchasing such estates may grant *annu.* Ah, Case Billingsley, and you, James Bradley—will it ever be known what share you respectively had in manipulating that Act ? But your names are not *yet* familiar to our readers. It is enough for the moment that you obtained a Charter and granted annu. ! The rest will appear in due sequence.

Towards the close of this same year, 1719, a subs. was opened for £1,200,000 for securing annu., settling of jointures, and assuring of lives. The subs. contract was as follows :

That the subs. do agree to pay the respective sums against their names, in such proportions as shall be called for by a Court of Directors, and in order to obtain a charter the better to carry on the said design, they agree to pay 2s. 6d. p.c. on the sums by them subs. ; which subs. money is to be paid into the hands of Messrs. Green and Eades, and is not to be taken thence but by an order signed by a majority of the committee. And also agreed that any subs. may have liberty to withdraw his subs. on notice in writing to Mr. Henry Symonds, at his house in Friday Street, at any time within seven days

before the day appointed by advertisement in the Lond. Gazette, of the choice of directors, on the forfeiture only of the said 2s. 6d. paid as subs.

The projector of this subs. was Mr. Thomas Burgess ; and in its earlier stages it was called Burgess's subs. Mr. Burgess was called before the Parl. committee in the following spring, and said :—That £1461 5s. had been paid in as part of the subs. ; and that £113 2s. 4d. thereof had been disbursed ; that there had been no transferring any of the stock ; and that the receipts are not made payable to the bearer.

The hist. of this project will be continued under our hist. of Life Ins. A petition was presented to the King in Council by Sir James Hallet, and others, praying for a Charter of Incorp. This petition was opposed by the *Amicable So.*

In the *Daily Post*, 26th January, 1720, appeared the following :

We hear the proprietors of Mr. Thomas Burgess's subs. to a fund for granting annu. having petition'd His Majesty for a charter, and received great encouragement therein, are resolv'd to make a proposal for easing the Government of all the irredeemable annu., in such method that the proprietors of such irredeemable annu. may enjoy the same for their respective terms, out of an ample land security for that purpose to be provided.

In this last proposal, the projectors had a powerful and a successful rival.

At this particular juncture (1719) the national finances were very low. The life annuities granted towards the close of the preceding century, and to which we have drawn special attention, were in arrear, and the bargains which from this distance of time look so rosy, then looked very dark and gloomy. But a light suddenly appeared, and was eagerly followed. The South Sea Co. was rising to the zenith of its power. Its governors, with the King at their head, were ambitious to grasp the whole National Finance. They offered to the short-term annuitants (32 years) South Sea Stock to the amount of 11½ years' purchase with add. in South Sea Stock, equal to the arrears upon them. This was eagerly grasped by the despairing annuitants. Early in the following year a similar arrangement was made with regard to many other classes of annuitants. The burden shifted from the nation to the South Sea Corp. in this manner amounted to £666,821 p.a. That light was an *ignis fatuus* ; and with these details before us, we can better understand how the "nation was beggared" by the bursting of that bubble.

We reach the year 1720—it is the beginning of the end of the epoch through which we have just travelled. There were various annuity projects on foot, but they were all of a much less complicated character than those of the past, and may be very briefly disposed of.

In the *Daily Post* of 11th Jan., 1720, there appeared the following adv.

Whereas there was a book opened for subs. for £100,000, to pay off annu. on lives, at John's Coffee-house, in Lombard Street, on the 29th December last ; and some objections being made against it, which being now remov'd, the book is still open'd ; and on Wednesday the undertakers will attend all day long from 9 in the morning till night. The articles to be had there.

On the 5th Feb. a subs. for £1,500,000 was taken at Garraway's Coffee-house, 'Change Alley, for the purposes set forth in the subs. contract for the same, as follows :

That the sum of £1,500,000 should be raised by subs. under the name of the *Annu. Co. for purchasing of Government securities ; granting annu. for life ; and lending money to merchants on good securities, that they may be enabled to pay their duties to the Crown more punctually, and thereby have the discount for prompt payment* : And (say the promoters) considering how advantageous it will be to several branches of the revenue, and trade in general, it is hoped by proper application to obtain His Majesty's most gracious letters patents for incorp. the said subs. into a co. ; and if a charter cannot be obtained, then to propose the uniting of this with some other co. or so. who have already made several advanced steps towards their estab. Therefore books are laid open this day, being Friday the 5th February, 1719, at Garraway's Coffee-house, in Exchange-alley, at ten of the clock in the forenoon, and so to continue until the subs. is completed, upon the following terms : That no person shall be admitted to subs. for more than £10,000 in his own name. That no person shall subs. for less than £1000 in his own name. That every subs. shall pay 3s. p.c. on his subs., which shall be lodged in the hands of Messrs. Mitford and Mertins, Bankers, in Cornhill ; 8d. whereof being for the use and benefit of the proposer, and towards defraying incident charges ; the remainder to be in their hands towards the charge of obtaining a charter under the direction of managers when chosen to issue out the same. That in 14 days after the books are completed, a general meeting of all the subs. shall be advertized to consider of what methods will be proper to proceed upon ; and to choose managers for the direction of the same ; for which purpose printed lists of all the subs. will be prepared, and proposals be laid before them for improvement of the said stock. That every person subs. entitled to the stock by this receipt shall be subject and liable to what calls of payment the managers shall think fit, or shall lose his title to, and subs. money in the said stock. That every person subs. £1000 is entitled to a vote ; he that subs. £5000 to 2 votes ; and he that subs. £10,000 to 3 votes ; and the £5000 and £10,000 subs. are entitled to be chosen managers or directors.

The Parl. Com., of which we have presently to speak, took the following evidence concerning this project :

Mr. Baker, the proposer of the aforesaid subs., being examined, said that all the money received was paid to Messrs. Mitford and Mertins ; and that the subs. has no rise in its value, neither is there any trans. made. That there has been one meeting of the subs., at the Swan Tavern, 5th of last month, and that the court chose a governor ; and it was agreed by the said general court that Messrs. Mitford and Mertins should be accountable to Colonel Wyndham, and five other gentlemen, for the money already paid into their hands, according to the preamble of the subs. books before mentioned. And then directed the proposer to lay before them what further schemes he has for advancing the so., and agreed that a general court should be held on that day seven night. That a petition is drawn up, in order to be presented to His Majesty, but not signed.

This scheme became generally known as *Baker's Annuities*.

In the *Daily Post*, 6th Feb., appeared the following :

Next week a subs. will be taken for a sum of £1,200,000, to be a fund for granting annu. by way of survivorship, and providing for widows, orphans, etc., from a calculation made upon the last reduction of int. to 5 p.c. Permits will be deliver'd out on Monday next, at the *Rainbow Coffee-house*, in Cornhill, to such as desire to subscribe; and the day after the same are delivered, a book will be opened for the said subs., and at the same time to deliver out receipts; at which time a general meeting will be appointed to choose trustees to carry on the said undertaking.

In the *Daily Post*, 23rd February :

At Mercers Hall in Cheapside, this day, being the 23rd inst., will be opened a subs. for raising £1,000,000 sterling to purchase unredeemable annuities and other securities, for granting annuities on lives at the rate of £4 p.c. for the first year, £5 p.c. for the second, and so on advancing £1 p.c. every year successively during the respective lives of the annuitants, as will appear more at large by the proposals intended speedily to be pub. Attendance will be given by Mr. Draper, at the said Hall, from 10 to 12 and from 3 to 5 in the afternoon, to receive subs. and give receipts for 2s. 6d. p.c., which is to be the present deposit. N.B.—The gentlemen who have already receiv'd from the managers permits for this subs. are desired to be early in the Hall, for the book will be closed as soon as the subs. are full.

There was a further scheme for £1,200,000 to be advanced on goods, stock, annu., talleys, etc., held at Robins Coffee-house in Exchange Alley. A general meeting of the subscribers was held on 17th March, at Merchant Taylors Hall, on "special affairs." And in the *Daily Post* of Friday, 17th June following, the proprietors were requested to attend a meeting at the Virginia Coffee-house, "where all the subscribers are desired to bring their receipts and have them exchanged, according to the tenour of their patent for making, and drying of malt, and improving of hops."

In the *Daily Courant*, 13th June (1720), appeared the following adv. :

They who have annuities for Life only on the £14 p.c. in the Exchequer, are desired to meet at the *Sun Tavern*, behind the Royal Exchange, at 11 in the forenoon this present Monday, the 13th inst., and every day this week, to agree upon such terms as shall be thought reasonable, to treat with those persons who have the reversions: that the design of the Government may be better answered of having the same subscribed to the South Sea Co.

Sir Richard Steele about this time proposed a scheme of 10 p.c. tontine life annu., for the purpose of raising an add. million of cap., which embraced some points of interest and merit. "When I have repeated (he says) that time is the best paymaster from the State, I shall go on to explain a scheme of my own, which turns upon the *lives* of individuals, and makes the mort. and decay of particulars, the foundation of new life and strength to the whole. And this is the mut. advantage of the private and public, but the greater good to the latter." The scheme is too long to be quoted in detail. Each class consisted of 10 lives, upon each of whom £10 was paid, and it would happen by survivorship that one of such persons would receive £10 per ann. for the £10 sunk. The pamp. is entitled *A Nation a Family*, etc.

The next act in the drama was the following :—At the Council Chamber held at Whitehall, the 12th day of July, 1720. Present, their Excellencies the Lords Justices in Council :

Their Excellencies the Lords Justices in Council, taking into consideration the many inconveniences arising to the public from several projects set on foot for raising of joint stock for various purposes, and that a great many of His Majesty's subjects have been drawn in to part with their money on pretence of assurances that their petitions for patents and charters to enable them to carry on the same would be granted: to prevent such impositions, their Excellencies this day ordered the said several petitions, together with such reports from the Board of Trade, and from His Majesty's Attorney and Solicitor General, as had been obtained thereon, to be laid before them; and after mature consideration thereof, were pleased, by advice of His Majesty's Privy Council, to order that the said petitions be dismissed.

But early in the present year the attention of Parl. had been drawn to the subject of these, and numerous other projects. The journals of the House record under date 22nd February, 1720, the following :—"A complaint being made to the House of several publick and private subs. in and about the cities of Lond. and Westminster, for several unjustifiable projects and undertakings, whereby great mischiefs may accrue to the public :—ORDERED, That a Committee be appointed to inquire into and examine the several subs. for Fisheries, Insurances, Annu. for Lives, and all other projects carried on by subs. in and about the Cities of London and Westminster; and to inquire into all undertakings for purchasing joint stocks or obsolete charters; and that they do report the same, with their opinion thereupon, to the House."

The Committee was appointed accordingly, having power to send for persons, papers, and records; and was sitting during the advent of the various last-named projects. A preliminary report was made to the House by this Committee on 18th March, to the effect that some persons concerned in the undertakings "had endeavoured by corruption and other undue practices to obtain charters to carry on their projects." The names of Billingsley, Bradley, and Thompson, obtain very prominent mention in this report. A final report was made on 27th April, which we shall only glance at here, inasmuch as it must be given in much more detail in our HIST. of MARINE INS. We do not indeed find much concerning the annu. projects. The substance under that head was as follows :

There was a petition headed by several Earls, Lords, Bishops, and Knights, with numerous merchants and others, which says :

Several of your petitioners encouraged persons from England to go to Scotland, and purchase the

forfeited estates lately sold there; and have since by a voluntary subs. to the governor and co. of *undertakers for raising Thames Water in York Buildings*, raised a joint stock or fund of £1,200,000 sterling to purchase such and other estates; upon the credit of which they propose to grant *annu. for Life* to such of Your Majesty's subjects as are straightened in their fortunes by the reduction of int., whereby the annu. formerly granted by Parl. (which are the most difficult of all the public debts) may be more easily redeemed.

The petitioners proceed to speak of the promoters of another undertaking "who are not so well affected to Your Majesty." The promoters of this other undertaking said in their petition:

That it will be of very great advantage to the widows, orphans, and other subjects of these Your Majesty's dominions in general, could they have a safe and satisfactory security to resort to for purchasing annu. whereby to improve their small fortunes, and enable them to live comfortably without either becoming burdensome to their friends, or by time to waste their capital, and be thereby reduced to poverty and want.

It is not very easy to determine which project is the identical one here referred to. The writers of the period furnish the following list of annu. projects, some of which are not included among those already spoken of:

1. For granting annu. by way of survivorship, and providing for widows and orphans; 2. Rainbow, Cornhill; cap. £1,200,000; 3. Whilmore's lottery annu.; 4. Baker's annu.; 5. Burgess's annu.; 6. Le Brun's office of assu., and annu. for everybody; 7. Freek's annu.; 8. Widows Pensions, cap. £2,000,000; 9. Annu. on lives; 10. For lending money to merchants to pay their duties; for purchasing Gov. securities; *for granting annu. on lives*; and for building ships to let to freight.

The upshot of the whole proceeding in Parl. was the passing of the 6 Geo. I, c. 18—*An Act for better securing certain powers and privileges intended to be granted by His Majesty by two Charters for assu. of ships and merchandizes at sea; and for lending money upon bottomry; and for restraining several extravagant and unwarrantable practices therein mentioned*—but generally and more emphatically called the BUBBLE ACT; under which head its provisions, so far as they relate to Bubbles, will be set out fully; while its other provisions will appear in detail under our HIST. of MARINE INS. It enacted that from and after 24th June then next (1720), all undertakings tending to the prejudice of trade, and all subs., etc., thereto; or presuming to act as corporate bodies without legal authority; *and all acting under obsolete charters, etc.*, should be deemed illegal and void; and all such undertakings deemed public nuisances.

We have already spoken of the so-called *Public Treasury*, founded in 1716. It had some cap. subs.; but we hear no more of it until after the passing of the last-named Act, when the copartners issued the following adv.:

Now whereas in the year 1716 a sum of money was subs. and paid in, and writings drawn up and duly executed by and between several of the parties concern'd. This is to give notice, that the author of the said art., and others who advanced their share of money then subs. to the said undertaking, have met together, and agreed to divide their own original shares into 50,000 shares, and settle them at £100 each share; and they will now sell some part of those shares at 10s. each share, the persons purchasing to be liable to the conditions of the original articles; 2s. 6d. of the said 10s. to be paid down upon the delivery of titles of those shares, and the remaining 17s. 6d. as soon as a general committee is chosen to call in the first payment, according to the tenor of the original articles. The titles to the said shares will begin to be delivered out this day at St. Paul's Coffee-house, at 9 o'clock, at which time the original articles (reprinted verbatim) may be had, which said book is sold at 6d.

They are now reprinted to show the world that the late Act of Parl. to put down the new projects, does not in anywise relate to suppress this undertaking, it having been fix'd long before the year 1718, the time limited in the said Act. Neither is there any new subs. taken in, only persons are admitted to purchase part of the first proprietors' original int. or shares in the said undertaking, which is agreeable to the present statutes of the realm. Therefore a house will be taken for the treasury, and business enter'd upon with expedition.

We do not know what the fate of this particular project was. But this we do know, that if the Act of Parl. last quoted was not effective in allaying speculation, the breaking up of the South Sea Co., which very speedily followed, was most painfully effectual in that direction—and that half a century elapsed before we hear much more of annuity or ins. projects. And what is even more to the point, this same half-century was devoted to the perfecting the science of Life contingencies, and thus providing the means for dealing with Life Annuities on a sound and scientific basis.

The first publication we have to welcome in this period was one by Abraham de Moivre—*Two Letters on the reimbursing and paying off Annuities*. These were published in 1720.

In 1725 M. de Moivre pub. the first ed. of his tract entitled *Annuities on Lives, or the Valuation of Annu. upon any number of lives, as also of reversions*. In order to shorten the calculation of the values of such annu., he assumed the ann. decrements of life to be equal; that is, that out of a given number of persons living at any age an equal number die every year, until they are all extinct; and upon that hypothesis he gave a general theorem, by which the value of annuities on single lives might be easily determined. This approximation, when the utmost limit of life was supposed to be 86 years, agreed very well with the true values between 30 and 70 years, as deduced from Dr. Halley's Table; and the method was of great use at the time, as no tables of the true values of annuities had then been calculated except the very contracted one by Dr. Halley, already given.

Here is the somewhat crude Table of Annu. Values deduced by De Moivre, working from the highest ages downwards. Taking his own words, he says, "Upon the principles hitherto explained, I have calculated the values of ann. for every 10th year for an int. of 5 p.c., which are as follows :

The following are a few specimens of the annu. values deduced from the correct but laborious method of Halley, for the purpose of comparison with the results derivable by the facility of De Moivre's hypothesis, calculated at the same age.

Age.	Dr. Halley's Method.	De Moivre's hypothesis.
20	12.78	12.30
30	11.72	11.61
40	10.57	10.70
50	9.21	9.49
60	7.60	7.83
70	5.32	5.50

Age.	Years' Purchase.
76	3.78
66	6.46
56	8.88
46	10.62
36	12.20
26	13.60
16	14.84
6	15.21
1	11.70

Mr. Farren has already pointed out that although in the present advanced state of vital statistics, such values would not be deemed sufficiently approximative, yet at the period of De Moivre's pub., when even distinctions of age were practically overlooked, the differences between the two series were relatively too trifling to be worthy of consideration.

De Moivre pointed out—and was the first to do so—that

In estimating the values of annu. upon lives, regard must be had to the int. which money bears, and to the prob. of lives continuing a longer or a shorter time. The rate of int. is generally regulated by law, but the greater or less prob. of the duration of life must be deduced from obs.

The table pub. by Dr. Halley for estimating the prob. of life being very artificially contrived, and grounded on such obs. as one may reasonably suppose have been made with all the exactness possible, we have annex'd it to this treatise, in order to make use of it as occasion shall require. It exhibits at one view the prob. that a person at any age proposed may live any given number of years. It is distinguished into several columns, showing alternately the age, the number of persons living of that age, both which are always written over against one another.

This treatise of 1725 may be regarded as De Moivre's great work (he had pub. his *Doctrine of Chances* in 1718), and it speedily passed through several eds. He commenced this work by the following observations :

The method of calculating the values of annu. upon lives seems never to have been perfectly understood 'till Dr. Halley first pub. the rules of it; which may be seen in the *Phil. Trans.*, No. 196. Altho' there is some ground to believe that what he writ upon that subject was partly occasional; yet there appears in it the same exquisite judgment and sagacity that has always shown itself in all his other productions. As this calculation chiefly depends on the various degrees of prob. which lives of different ages have to continue in being, so it was previously necessary that a table should be constructed which might at one view exhibit the state of life in respect to its probable duration. Such a table was accordingly constructed in the best form that could be contrived, out of five years' observations upon the bills of mort. of Breslaw, the Capital of Silesia.

But notwithstanding the pains taken by that excellent mathematician in fitting a true algebraic calculation to his table of observations, yet he was sensible that both his table and calculations were capable of further improvement; of this he expressed his sense in the following words: "Were this calculus founded on the experience of a very great number of years, it would very well be worth the while to think of methods to facilitate the computation of two, three, or more lives." From whence it appears that the table of obs. being only the result of a few years' experience, is not so entirely to be depended upon as to make it the foundation of a fixt and unalterable valuation of annu. for life, and that even admitting such a table could be obtained as might be grounded on the experience of a very great number of years, still the method of applying it to the valuation of several lives would be extremely laborious, considering the vast number of operations that would be requisite to combine every year of each life with every year of all the other lives.

I own that in the method which I have taken to make the calculations of lives easy, I have not made use of any other table than of that which has been constructed by Dr. Halley; for which reason I am contented it should be thought that the values of annu. as deduced from my calculation are still liable to some exceptions, and need not therefore prejudice any established practice of estimation. Therefore all I can in justice pretend to is, to have contrived such rules as will make the valuation of lives easy, whenever it shall so happen that a table is produced that can be depended upon, as to the sufficiency of the number of observations on which it is built, the accuracy of the observers, and the skill of those who construct the table from the observations.

He primarily details Dr. Halley's method of proceeding, and fully corroborates its correctness, but adds, "that it was not, however, really necessary to calculate the separate value of each ann. payment for all ages: for when the value of a life annu. had been determined for one age, the value for the age one year less might be incidentally deduced."

The reasoning by which this important theorem was substantiated may be cursorily illustrated by supposing the annu. in question to be £1 p.a., and the value of a similar annu. at some particular age to have been already ascertained by Dr. Halley's process. De Moivre then in effect argued, that though the value of the annu. at the age one year less would be certainly more than at the subsequent age, yet, that the additional value could not amount to £1; because even supposing the person certain to attain the subsequent age, yet the £1 to be then due would have to be discounted in computing its prospective value.

Moreover, as the worth of the subsequent annu. was also, as it were, one year distant, so the ordinary value of such subsequent annu. would also have to be discounted in respect of the intervening year. But in lieu of its being certain there was only a pro-

bable chance of the person's attaining the extra year of age; consequently the extra £1 and future annu. would be exactly worth such a proportion only of their discounted values as there was a proportionate chance of the person's living the one year in question, and thus the value of the annu. at the lesser age in question was indirectly ascertained. By this simple method of proceeding De Moivre contrived to determine the value of the required annu., by merely considering the intermediate chance of living from the one age to the other; whereas Dr. Halley had previously supposed it to be necessary to recommence for every age, and to calculate the value of each payment in succession.—*Farren*.

This excellent and orig. suggestion by De Moivre (continues Mr. Farren) is not only trustworthy in itself, but has afforded the fundamental formula by which nearly all our well-known tables of life annu., including the NORTHAMPTON and CARLISLE, have been verified or computed; the procedure being to commence at the greatest age in the mort. table, and to retrogressively calculate the annu. values from age to age, by yearly intervals in the manner referred to. As the origination of this formula has hitherto been generally attributed to the celebrated mathematician Thomas Simpson, whose treatise on annu. was not pub. till seventeen years later (1742), it is desirable to investigate the plea upon which the idea has been claimed for De Moivre. We cannot, however, undertake this here; nor is it necessary, as the subject is fully discussed in *Farren's Historical Essay on the Doctrine of Life Contingencies*, 1844, which see.

De Moivre having portrayed the method of obtaining particular results, then proceeds to investigate the natural law upon which such results might be presumed to depend. Speculating as to the character of such law, he says, "In order to it, we may consider that whatever be that law which is observed by nature in the perpetual decrements of human life, that law must, conformably to all the other laws of nature, be such as to proceed regularly, at least for some short intervals of time."

In connexion with this view, he then examines Dr. Halley's table year by year, and finding that the differences between the numbers were tolerably constant, adds, "Let us therefore consider—1st. What would be the result of an *hypothesis* which makes the prob. of life to decrease in *arithmetical progression*. 2nd. How far the calculations deduced from it agree with the tables. 3rd. What corrections are necessary to be made to it where it varies from the tables." The development of this idea led to the famous hypothesis, since and now known as DE MOIVRE'S HYPOTHESIS, of which we shall speak more at large under that head. (See De Moivre again, 1738.)

In a quarto ed. of John Smart's famous *Interest Tables*, pub. in 1726, there is an appendix as to *annu. on lives*, in which he says:

I did intend to have calculated some tables of the probable values of one, two, and three lives, according to the different ages of mankind, and at several rates of int. But as such tables must be founded upon observations made upon the number of persons dying at such different ages, and as I could meet with very few such observations that could be depended on, and those but for a few years, I laid aside my design, not doubting but hereafter when proper observations shall have been made, some one or other will take the pains of constructing such tables.

He then suggested an improvement in the Bills of Mort. to the end in view, which was very soon afterwards adopted. [BILLS OF MORT.]

In the same year Mr. Richard Hayes, "Teacher of merchants' accounts in that part of Cannon Street called Eastcheap," pub. *A new Method for valuing of Annu. upon Lives*, showing at sight as follows:—I. How many years, months, etc., purchase an annu. upon life for any age from 30 to 73 years is worth, when money yields 4, 5, 6, 7, or 8 p.c. int. II. How much a year £100 is worth upon life for any of the above ages, etc. III. How many years an annuitant must live to receive the value of the money sunk, etc., etc. The author says in his preface:

Herein you will find all the most necessary questions between buyer and seller, relating to the value of an annu. upon a single life, resolved at sight; and with a little more trouble what relates to the valuing of two or more lives, taking lives in with other lives, rev. of lives, and the value of an annu. in expectation, according to the proposals of the *Mercers Co.*; and to render the whole as practicable as possible, there is also added several tables, showing at one view the value of any annu. upon a single life from £1000 a year to £1 a year, for all ages from 30 to 73 years, at different rates of int., *i.e.*, if money will yield 4, 5, 6, 7, or 8 p.c. int.; and then that the buyer and seller may be each sensible of the other's advantage, I have shown them the odds, by valuing their chances to the usual annu. given upon life for £100 when money is worth but 5 p.c., and have also compared *the usual random practice*, and this new regular method of fixing the value of an annu. upon each age of life together, that it may the more easily be seen which comes the nearest a *par*.

This work, although, as will be judged from the above, only of an arithmetical and popular character, contains a table of life annu. at yearly ages, 30 to 73—the first complete one which had been pub. Halley and De Moivre had each explained the methods of proceeding, yet neither had supplied other than a specimen table.

Mr. Hayes does not state how he computed his tables otherwise than by saying at the commencement that he had calculated them according to the chance of annuitants living to the extremity of the common oldest age of life," and this upon suppositions of "the various degrees of prob. which lives of different ages have to continue in being." As, however, this last description also occurs in the preface of De Moivre's treatise, it is probable that Mr. Hayes adopted some arithmetical version of the hypothesis originated by that author.—*Farren*.

Mr. Hayes first treated the subject in the manner then most commonly understood. Thus :

To provide for a family, a clergyman, or layman, aged 47 years, holding a benefice or place during life, and having a family, would willingly make some certain provision for them ; but finding that his income will let him lay up about £46 a year, and that upon no better security than his own uncertain life, therefore chooses rather to sell the surplusage of his income. The question is, what provision the said £46 a year will make for his family, admitting the money is valued at the common legal rate of 5 p.c. int. ?

He then proceeds to show that the value of such an annu. of £46 upon a life of 47, is £480 15s., by which he infers that the person in question might obtain a present advance of £480 15s. in consideration of his selling to some other person an annuity of £46 for the remainder of his life. He next gives tables showing how such principal sum might be improved for the benefit of the family of said clergyman or layman ; and really shows that, according to the expectation at 47 years of age, it would produce £1057 os. 10d.

It will not fail to strike the reader that this was a very roundabout way of going to work, and that a life ins. would be a short cut to the same result. That is so. *A life ins. is but an annuity reversed.* If there had been any life asso. then constituted such as those that now abound, Mr. Hayes could have said in so many words "If the person aged 47 can spare £46 p.a., he can ins. his life for £1057 os. 10d."—which at rates of prem. deduced from the materials then at hand would just about have been the amount. But it took nearly 35 years of additional hammering at the subject of life annu. before this became plain. The *Amicable So.* did exist, and would really have provided something like the protection required ; but at that period there was very little certainty in its operations.

The ann. values given by Hayes are under a very complex arrangement, but we will reduce them to modern form, and so produce a table which must be regarded as the earliest complete life annu. table for ages 30 and upwards which had been produced. Int. 5 p.c.

Age.	Value of an Annu. of £1.	Annu. £100 will produce.	Age.	Value of an Annu. of £1.	Annu. £100 will produce.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
30	13 2 6	7 12 4	52	9 12 1	10 8 2
31	12 18 9	7 14 6	53	9 8 9	10 11 8
32	12 15 11	7 16 2	54	9 5 5	10 15 7
33	12 12 11	7 18 1	55	9 2 1	10 19 6
34	12 10 2	7 19 10	56	8 17 3	11 5 7
35	12 7 2	8 1 9	57	8 12 11	11 11 2
36	12 4 4	8 3 8	58	8 8 4	11 17 6
37	12 1 5	8 5 8	59	8 3 9	12 4 0
38	11 18 0	8 8 0	60	7 19 3	12 11 0
39	11 14 9	8 10 4	61	7 14 9	12 18 0
40	11 12 2	8 12 3	62	7 9 6	13 7 6
41	11 8 9	8 14 9	63	7 4 4	13 16 9
42	11 4 8	8 18 0	64	6 19 1	14 7 4
43	11 1 9	9 0 4	65	6 13 8	14 19 1
44	10 19 1	9 2 5	66	6 8 1	15 12 4
45	10 15 10	9 5 3	67	6 2 4	16 6 11
46	10 13 6	9 7 4	68	5 16 4	17 3 8
47	10 9 0	9 11 4	69	5 10 2	18 2 10
48	10 6 2	9 14 0	70	5 3 10	19 4 11
49	10 1 8	9 18. 3	71	4 15 11	20 16 8
50	9 18 7	10 1 3	72	4 10 7	22 0 10
51	9 15 4	10 4 8	73	4 7 0	22 19 0

There is one other remark of Hayes worthy of notice, as showing how practical experience *sometimes* reaches the same results as scientific investigation. Thus, in speaking of valuing annuities for the *younger ages of life*, he says :

And here in valuing of such lives, in conjunction with those of mature years, I shall wholly conform myself to the *usages amongst dealers*, in this way, *reckoning no more years for the value of a youth than for those of a middle age* ; and this is done, and it may be presumed, in regard to the many hazards of life incident to those of younger years, more than is common to those of advanced age.

In the following year (1728) Mr. Hayes pub. another work : *An Estimate of Places for Life*, showing how many years' purchase a place for life is worth, etc., etc. ; a very interesting work, which we shall notice under PLACES FOR LIFE : merely remarking here that it was turning the then knowledge of Life Contingencies to a very practical purpose as regards the customs of that period.

The 3rd ed. of Mabbot's *Church Leases* was pub. 1729, but we have already sufficiently noticed this work under date 1686. Much curious information as to the early methods of estimating the duration of life will be found under our chap. on LEASES FOR LIVES.

In 1730 Mr. John Richards, of Exon, pub. a work called the *Gentleman's Steward*, etc., which contained Tables of annuity-values for two and three lives : *the first time that*

such values made from actual calculation had been pub. The book is one of considerable interest : its writer had discovered the fallacy of mere guesswork in calculations affecting important interests. We propose to let this writer address himself as far as possible to the present reader :

After having said something of reversions and of the queries that will arise about them, I proceed to the tables, which are ranged in the following order :

1. Is for finding the value of an annu. for a certain number of years in ready money, at 4, 5, 6, 7, and 8 p.c. int.; but this being a table that is very common, I had no more trouble about it than just to transcribe it; for it was ready made to my hands; as was likewise 2, showing (in ready money) the value of £1, payable after a certain number of years, at the same rates of int. with the former.

3. Is to discover the worth of an annu. that is to continue 7, 10, 14, or 21 years, if a person of a given age do live so long; and these are calculated by the method laid down by Mr. Abr. de Moivre in his *Annu. on Lives*. 4. Shows the value of an annu. that is to continue during the life of a person of any age at 4, 5, 6, 7, and 8 p.c. 5. Of the value of two joint lives. *By joint lives is meant that the annu. is to continue till one of those lives is dead, and not longer.* 6. Of the value of two joint lives of different ages. 7. Exhibiting the value of three joint lives of different ages.

All these five last-mention'd tables are built on the foundation laid by the great Dr. Halley, in *Phil. Trans.*, No. 196; and the calculus perform'd by the method set forth by Mr. De Moivre in his tract before mentioned.

The writer of this little book of 127 pages then takes the reader into his confidence :

Having gone thro' with these tables (and pretty well surfeited myself on figures). . . . These papers having lain by me for above three years, during which interval that surfeit of making tables was pretty well worn off; and considering that it would render the work more useful, if tables on the value of an annu. on the longest liver of 2 or 3 persons were subjoined to it: In pursuance of this thought, I have, with a pretty deal of trouble, perfected such tables; whereby the value on such a tenure (which is the most in use amongst us) may be found for lives of any ages, however combined, at one view.

The manner how these tables were computed is before hinted; but then the accuracy of the work must appear by the tables themselves. And this I must submit to the reader's judgement after I have told him, that tho' I made use of the most expeditious ways of working that I could think of, I made the operation for some particular ages, and so equated for the intermittent ones; all the labour that I saved myself in that way was, that I wrought for the rates of int. 4, 6, and 8, and by them equated those of 5 and 7; and that only for the tables of valuing single lives, and those for the joint lives: for as to the tables at the end of the book, they were calculated for every particular age, and to every rate of int. mention'd in them.

These particular tables are for "shewing the value of an annuity for two lives that is to continue till both are dead, at 4, 5, 6, 7, and 8 p.c., and to every tenth year of age." They contain 2100 tabular values.

It certainly is a very remarkable circumstance, that these early tables of annuity values were not called into existence for the purposes of dealings in annuities, which were carried on to a very large extent at this period; but for the purpose of estimating the values of leases on lives, and for other dealings in connexion with estates and tenures.

In the same year was pub. a dissertation on estates upon lives, etc., by Edw. Laurence, land surveyor; Dr. Halley's table being inserted therein, and recommended for adoption in preference to the imaginary estimates on lives then current.

In 1731 was pub. a true estimate of the value of leasehold estates and of annuities and revs. for lives and years; being an answer to a pamphlet entitled *Sir Isaac Newton's Tables for Renewing and Purchasing Leases*, etc., and to a letter added to it, entitled *The Value of Church and College Leases considered*, etc. There was a good deal of controversy on the question of leases about this period. [LEASES FOR LIVES.] We have explained under date 1686 that Sir Isaac Newton was not the author of the Tables above referred to.

In 1734 there was pub. *Considerations on the Necessity of Taxing the Annuities granted by Parl. in the Reign of King Wm. & Queen Anne*.

In 1735 was pub. by Mr. Gael Morris, *Table for Renewing and Purchasing of Leases, and also for Renewing and Purchasing of Lives*. It includes Dr. Halley's table at 4 p.c. by approximation, and popularly illustrates the application to life leases, etc., of four of De Moivre's problems.

The author says :

The learned Dr. Halley pub. a table of the values of annu. upon single lives computed for an int. of £6 p.c. for money; but as since that time int. is reduced to £4 p.c. in our Gov. securities, I have computed the following table for that rate of int. . . . By this table it appears that an annu. for the life of a person of 25 years of age is estimated at 14 ⁸⁰/₁₀₀ years' purchase; i.e. one pound p.a. is reckoned worth £14 16s. £10 p.a. is worth £148, and £100 p.a. is reckoned worth £1480, etc.

But it ought to be observ'd that, according to the weekly bills, very nearly half the persons that are born in Lond. die under 5 years of age: and the hazards of persons between 15 and 25 are so many, that an annu. may in fact be purchased cheaper upon a life under 25 than upon the life of a person of 30 or 40 years of age: and therefore I reckon 14 or 14½ years' purchase to be the full market price for the best life. For combining two or three together, and for finding the values of renewing in such combination, I will make use of the rules laid down by Mr. De Moivre, in his *Treatise of Annuities upon Lives*, p. 28.

In 1737 was pub. anonymously : *An Essay to ascertain the Value of Leases, of Annu. for Years, and Lives; and to estimate the Chances of the Duration of Lives*. In the following year the work was reprinted and the name of Weyman Lee added to the title-page. The author stated that a life annuity at any particular age ought to be considered as exactly equal in value to an annuity certain for as many years as the life had an equal chance of surviving: Thus if it were an equal chance that a person of a particular age would live 15 years, then Mr. Lee contended that a life annuity for such age ought to be equal in value to an annu. certain for 15 years, because as an equal number of such persons would

die before and after that term, the medial limit should represent the average measure. This idea, though inherently false, was prob. extremely plausible to popular readers.

Finding that Dr. Halley's and De Moivre's calculations were not conformable to this dictum, Mr. Lee attempted to prove that the mathematical principles of those authors were untenable; but from Mr. Lee's not possessing mathematical acquirements, and thus not comprehending mathematical demonstrations, etc., the reader will not be surprised to learn that in the 340 octavo pages devoted to the topic (p. 130-470), Mr. Lee rather exemplified the absurdity of his own pretensions, than weakened the arguments of the celebrated mathematicians he had presumed to attack.—*Farren*.

In 1737 there was pub. in a small fo. sheet, *A Proposal and Scheme for the Government raising by Subs. Five Millions of Money*, in order to pay off therewith the like sum of the then 4 p.c. South Sea annu.; and to grant in lieu and instead thereof, annu. for and upon 50,000 single lives, chiefly, if not only, of natives or inhabitants of Gt. Britain, and by way of the thereto annexed new invented lottery scheme, and issuing 50,000 tickets at £100 each.

In the *Gentleman's Magazine* for Nov. of this year, there was the following :

A gentleman turned of 44 would purchase for himself and wife turned of 45, an annu. payable half-yearly of £100 a year during their joint life, and of £50 a year during the life of the survivor of them. Query, first, *What is the present worth of such annu. to begin immediately?* and secondly, *What is its present worth, supposing it to begin 6 years hence, reckoning money at 4 p.c.?* And when the gentleman's hands be in, if they would be so good as to give their opinion, *What is the present worth of the said annu. to begin at 2 years, or at 4 years, or at 6 years, or at 8 years, or at 10 years hence*, your humble servant would think himself much obliged to them; and do hereby promise to send thro' your hands a pair of guineas to the gentleman whose calculation shall be judged the most equitable between seller and purchaser.—N.B. The annuitants are to all appearance in a pretty good state of health, and of middling constitutions.—I am, sir, your constant reader, A.B., of Great Yarmouth.

A letter to the Editor assured him that the application was a *bond fide* one.

The mag. for the following Feb. brought a shoal of answers, from which we shall select a few points worthy of special note :

S. T. replies that the values may be found without difficulty by the method and curious table calculated by the learned Dr. Halley. He then gives the values (explaining the process) as follows : annu. to commence immediately £1331, at the end of 2, 4, 6, 8, 10 years, £1148, £985, £845, £719, and £614 respectively.

A. B. of London says : This question depending upon the most equitable method of reducing the uncertainty of human life to a standard, or ascertaining a proper purchasable term for the residue of a single life or more, I shall offer something entirely new on that head. The vulgar way of estimating one life a lease of 7 years, two a term of 14, and three 21, is doubtless most unjust. Nor in my opinion is the method of reckoning one life 10 years, two 19, three 27, etc., every time bating one, tho' more reasonable than the other, much to be preferred. He then explains his own method, of which some idea may be formed from the following illustrations :

First, I suppose every life after it has passed the dangerous period of seven years to be a probable term of seventy years; and seven years I esteem to be the probable life of every child quick-born. *Second*, I look upon every life, particular reasons to the contrary in particular cases excepted, to be a purchasable term of [the figures are not legible], or half the time of its probable continuance, according to the above supposition. *Third*, I suppose ten lives, none of 'em under seven, to be a purchasable term of seventy years, or of such part of it as, at a mean among themselves, they may according to the first proposition have to live. . . . He then works out the values at three rates of int. 4, 6, and 8 p.c., making the value of immediate annuity £1270, £1087, and £941, and the deferred values (which for brevity we will take at 4 p.c. only) £1127, £987, £874, £752, and £659. He considers he has earned the promised reward.

Mr. Turner, Schoolmaster, Beaconsfield, answers the query, arriving at his results in the following supposition : That the age of man (according to Scripture account) is 70 years, and therefore, as ye annuitants are allowed to be of healthy constitutions, they are to be supposed to arrive at that age; and consequently at 45 there remains 25 years to be purchased; and, after allowing for one year's difference in age, he works the values out as follows : £1580, £1391, £1217, £1056, £906, and £769, respectively.

Mr. J. Richardson says : The hypothesis of Dr. Halley, pub. 40 years ago, seems to me still the most rational one; it was from this that my tables (pub. about 7 years since in the *Gent. Steward*.) were calculated. He then works out the values £1196, £1018, £867, £739, £628, and £534, respectively.

Mr. Benjn. Darting, of Hull, made the values as follows : £997, £852, £569, £367, £222, and £119.

Some further correspondence followed, and the pair of guineas was ultimately awarded to A.B. of London. The residence of the original A.B. turned out to be Norwich, not Yarmouth.

In the years 1751, 1754, other annuity questions were propounded in the pages of the same mag., and answers obtained.

In 1738 M. Kerseboom pub. the first of his three tracts on *Mortality Obs. in Holland*; and in 1742 the second and third. He constructed his tables from the registers of many thousand *Life Annuitants* in Holland : registers which had been kept for upwards of 125 years. As a full statement of all the data employed in the construction of the tables will be given under head of KERSEBOOM'S MORT. TABLE, it is not necessary to anticipate it here. Mr. Milne in his art. on annu. in the *Ency. Brit.* says : The values of annu. according to M. Kerseboom's Tab. of Mort. are not given here, that table being of doubtful character, as he neither pub. the whole of the data from which he formed it, nor explained the manner of its construction.

To the 2nd ed. of *De Moivre's Doctrine of Chances*, pub. in 1738, was appended some remarks "on annuities for lives." This was indeed chiefly a recapitulation of his separate treatise on the subject, with a few additional problems. He also incidentally offered a

formula which, in another form, now constitutes one of the most important elements in such calculations. Its purport was to define the prospective value of a sum to be receivable if a person should die within a specified number of years. This problem De Moivre demonstrated was resolvable by a similar method of annual values to that proposed by Dr. Halley for life annuities.

De Moivre, on this occasion, also inserted a table in accordance with his hypothesis of life annu. values at 5 p.c. int. for every year of age from 1 to 85 inclusive, and thus appears to have offered the first complete table extant.—*Farren*. We propose to reproduce this table here :

The present value of an annu. of £1 to continue so long as a life of a given age is in being, int. being estimated at 5 p.c.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	11.96	16	14.20	31	12.88	46	10.99	61	8.16	76	3.78
2	12.88	17	14.12	32	12.78	47	10.84	62	7.93	77	3.41
3	13.55	18	14.05	33	12.67	48	10.68	63	7.68	78	3.03
4	13.89	19	13.97	34	12.56	49	10.51	64	7.43	79	2.64
5	14.12	20	13.89	35	12.45	50	10.35	65	7.18	80	2.23
6	14.34	21	13.81	36	12.33	51	10.17	66	6.91	81	1.81
7	14.47	22	13.72	37	12.21	52	9.99	67	6.64	82	1.38
8	14.53	23	13.64	38	12.09	53	9.82	68	6.36	83	0.94
9	14.60	24	13.55	39	11.96	54	9.63	69	6.07	84	0.47
10	14.60	25	13.46	40	11.83	55	9.44	70	5.77	85	0.02
11	14.53	26	13.37	41	11.70	56	9.24	71	5.47	86	0.00
12	14.47	27	13.28	42	11.57	57	9.04	72	5.15		
13	14.41	28	13.18	43	11.43	58	8.83	73	4.82		
14	14.34	29	13.09	44	11.29	59	8.61	74	4.49		
15	14.27	30	12.99	45	11.14	60	8.39	75	4.14		

The author says regarding this table :

I have one word to add, which is, that the tables I have printed in this book concerning the value of lives, being upon a supposition of an int. of 5 p.c., may be thought not to be well fitted for the present time : to which I answer, *first*, that in the body of my book I have given rules for calculating the values of lives for any rate of int. *Secondly*, that those tables were orig. composed when int. was at 5 p.c. *Thirdly*, that a man by purchasing a life at a certain price may, *without offending the law*, make 5 p.c. of his money or upwards. *Lastly*, that I intend shortly to pub. a little pocket-book containing tables for readily estimating the values of single and combined lives, for an int. both of 5 and 4 p.c., wherein I shall endeavour to prove, *that the rate of int. which a man ought to value his money at, when he purchases a life, is not to be regulated by the int. he can make by placing his money in the funds.*

In this same year (1738) Mr. John Smart, author of the famous int. tables, pub. a table of mort. deduced from the Lond. bills for the ten years 1727–37. This table was very little known, although it really was the first mort. table deduced from purely English data. We do not find that any annu. values were ever calculated from this.

In 1739 Mr. John Richards, of Exon, of whose first work we have already given a detailed account under date 1730, pub. *Annu. on Lives, and for Limited Terms of Years, considered* ; being observations on what hath been lately advanced by divers authors, tending to depreciate the value of estates on those tenures, etc., etc. The book contains nothing new regarding the theory or practice of annu. on lives. It is devoted almost entirely to the controversy then existing on the subject of leases for lives ; but the preface contains some obs. worthy of a place in any hist. of life annu. Thus :

A great many authors have of late years made it the subject of their enquiry to find out the value of annu. and estates held for years absolute, *and for years determinable on Lives* ; among which how few are there that have pursued the same with views disinterested, and free from prejudice ? and in how small a vol. would all that hath been pub. on that subject be comprized, were everything to be left out which is not the result of rational deductions from hypothesis in any degree prob. ?

Were this subject (as well as others) treated with no other view, but that of instructing mankind, by discovering to them useful truths ; and did such as undertake the task endeavour to express themselves, and convey their sentiments in terms short, plain, and intelligible, and suited to the capacities of those they should inform ; carefully avoiding all intricate and prolix methods of argument, in which error is often concealed, and the reader imposed on by false conclusions ; I say, were the arguments on this subject pursued in this manner, and with these views, and did none undertake to write on this point but such as have sufficient abilities to manage it ; the differences between authors, which at present appear of so monstrous a size, would soon dwindle into very small ones.

For, as to that part of the computation which is purely mathematical, and strictly demonstrative, in that everybody would agree. Thus, for instance, where the ann. sum, the rate of int., the term of continuance (or the ratio of a series expressing it), are fixed, no difference can arise about the value of such annu. in ready money : And as to tenures for life or lives, which are of all others the most difficult to value, on account of the uncertainty of human life ; yet in those the ann. sum and rate of int. being agreed on, all that would be wanting to adjust the value would be to fix the terms of a decreasing series, which would express the prob. of life from any given age ; and this being (from the nature of the thing) a matter incapable of mathematical certainty, *it would doubtless be of use to the world, if* (in order to fix the best hypothesis for that purpose) *such persons as have leisure, skill, and opportunity, would* (instead of cavilling about it) *from the Bills of Mort., Parish Regis., Rentals of Manors, and stewards' accounts ; from the pedigrees of families, lists of the successions of kings, nobility,*

bishops, etc., from their own observations, and from all other proper assistances, judiciously draw up and pub. their thoughts on that part of the subject: in which they should be very careful that no former customary methods of valuation, no views of self-interest, or of serving any particular set of sellers or purchasers, nor any other consideration whatever, but that of adjusting the series from the true result of the facts that they have collected, do in the least bias their judgment or corrupt their understanding; and were the enquiry pursued with such an honest integrity, and search after truth only, I am persuaded that all our disputes about this difficulty would soon vanish, and such an hypothesis might be estab. by facts thus fairly represented, as would have the concurrence of every judicious person who is willing to be informed himself, and who would not serve any interest of his own by the ignorance of other people.

These remarks were remarkably well timed, and indeed well pointed also. He makes one even more pointed, but justly merited home-thrust.

The author of the *Essay on Annu.* [Weyman Lee] hath done me too much honour, by exposing me to view in such good company as Dr. Halley, Mr. De Moivre, etc. He could not indeed expect that either of those gentlemen would pass so great a compliment on him as to take any public notice of his unfair treatment; and therefore, lest his large tract should pass intirely unnoted, he judged it necessary to irritate some persons of less distinction, that by stirring up their resentments, it might be thought that he hath advanced something worth the taking notice of.

In 1740 Struyck, a Dutchman, pub. a folio work at Amsterdam, in which he gives two tables deduced from separate obs. on the lives of male and female annuitants obtained from registers kept for about 35 years in that city. The tables taken jointly, differ but little from those of Halley; but they show a greater mort. than Kerseboom's (see 1742).

In 1741 Mr. John Innes pub. in Edin. a dissertation concerning the arithmetic of annu., to which was subjoined: "proposals for supplying the defects of this branch of arithmetic."

We now reach a name which will, and deservedly, always stand out prominently in the hist. of annu. on lives.

In 1742 Mr. Thomas Simpson pub. his *Doctrine of Annu. and Reversions*, etc., in which the subject is treated in a manner much more general and perspicuous than it had been previously. His formulæ were adapted to any table of mort.; and in the 7th corollary to his first problem, he gave the theorem to which we owe all the best tables of the values of life annu. that have since been pub. In the same work he also gave a table of mort. deduced from the Lond. observations; and four others calculated from it, of the values of annu. on lives, each at three rates of int.: the first for single lives, the three others for two and three equal joint lives, and for the longest of two or of three lives. [LOND. MORT. TABLE.]

We now propose to see what Mr. Simpson has to say regarding his own performance:

In the first place I have given a very exact table for estimating the prob. of life, deduced from ten years obs. on the Bills of Mort. of the City of Lond., whereupon the succeeding calculations are grounded. Then, after showing how to compute the values of single lives, I lay down a lemma, for the sake of those unacquainted with the principles of chances, by help whereof the most intricate problems in the subject are resolved. . . .

Next it is shown how to determine the values of successive lives, where the first possessor has a right, at his decease, to nominate his successor, and his successor a next successor, and so on. . . . Then is given a method for finding the values of Reversions, when the expectation depends on the chance of one particular life in possession surviving the rest. Lastly, are laid down some easy practical rules for approximating the values of lives without the help of tables.

What, I apprehend, may best recommend this performance, is the general, yet familiar manner in which the subject is treated: there not being a solution throughout the whole work, except those relating to the use of tables, that is not universal according to any table or obs. or degree of prob. of life whatsoever; and yet the conclusions and practical rules deduced therefrom are, for the most part, altogether as simple as could be derived from any hypothesis. I mention hypothesis, because some authors on this subject, without troubling themselves or their readers about obs., etc., have taken upon them to prescribe methods of their own that have neither foundation in experience nor in reason. But tho' I cannot help blaming those men who would thus arbitrarily obtrude their own notions upon the world for infallible rules, yet I would not be thought to condemn any hypothesis grounded upon reason and matters of fact, because such are often made use of to very great advantage: of which Mr. De Moivre's excellent book on this subject is an instance.

The following explains a peculiar feature of the table, and aims at a solution of the cause:

It is possible that the great difference which there is in one part of life between the value of an annu. according to the Breslaw obs., and the following tables may tempt some (especially those whose interest it is) to question the exactness of the tables, or the obs. whereon they are grounded; they may affirm that Lond. consists of too flux a body to admit of any certain measure for the prob. of a life; and that the accounts pub. by the Co. of Parish-Clerks are not to be depended on. But to this I answer, that tho' the continual resort of people from all parts causes indeed a great increase in the Bills of Mort., it will no ways influence the values of the annu. thence deduced, *if the numbers of persons coming up to town at all ages be proportional to the whole numbers of the living of the same ages*; and tho' this supposition is not exactly true in small ages, yet as experience shows it to be more nearly so in greater, and as the number of persons that come to live in town after 25 or 30 years of age is inconsiderable with respect to the whole body of inhabitants, it is evident that the value given in the table for all ages, not less than 25 or 30 years, can be but little effected from the cause above mentioned. 'Tis true the values for younger lives have not quite so good a foundation, but I presume the method that I have had recourse to upon this occasion is such as is not liable to any reasonable objections; and as to the difference that may arise from any uncertainty or error in the accounts of the Parish-Clerks, it can be but very little, because if the age happens to be given a little too high one time, there is the same chance of its being put down as much too low another.

Here is Simpson's table of annu. values at 5 p.c.

TABLE FOR THE VALUATION OF ANNUITIES UPON ONE LIFE—5 p.c.

Age.	Years' Purchase.	Age.	Years' Purchase.	Age.	Years' Purchase.	Age.	Years' Purchase.	Age.	Years' Purchase.	Age.	Years' Purchase.
6	14.1	18	13.4	30	11.6	42	10.1	54	8.6	66	6.9
7	14.2	19	13.2	31	11.4	43	10.0	55	8.5	67	6.7
8	14.3	20	13.0	32	11.3	44	9.9	56	8.4	68	6.6
9	14.3	21	12.9	33	11.2	45	9.8	57	8.2	69	6.4
10	14.3	22	12.7	34	11.0	46	9.7	58	8.1	70	6.2
11	14.3	23	12.6	35	10.9	47	9.5	59	8.0	71	6.0
12	14.2	24	12.4	36	10.8	48	9.4	60	7.9	72	5.8
13	14.1	25	12.3	37	10.6	49	9.3	61	7.7	73	5.6
14	14.0	26	12.1	38	10.5	50	9.2	62	7.6	74	5.4
15	13.9	27	12.0	39	10.4	51	9.0	63	7.4	75	5.2
16	13.7	28	11.8	40	10.3	52	8.9	64	7.3		
17	13.5	29	11.7	41	10.2	53	8.8	65	7.1		

It was considered that the values in this table were much too low for general use.

In 1742 Herr Kerseboom pub. in Amsterdam his first tract, containing a table of mort. deduced from the regis. of many thousands of annuitants in Holland and West Friesland. [KERSEBOOM'S TABLE OF MORT.]

In 1744 De Moivre submitted to the Royal Society in the form of a letter to Wm. Jones, Esq., F.R.S., a paper *On the Easiest Method for Calculating the Value of Annu. on Lives from Tables of Observations*, in which he endeavoured to determine the value of life annu. when a proportionate payment is allowed according to the interval between the last payment and the date of death. This paper is printed in *Phil. Trans.* for that year.

During the two wars which began respectively in 1739 and in 1755, little money was borrowed either upon annu. for terms of years or those for lives. Indeed, at these periods annu. either for terms or for lives were seldom granted, but *as premiums to the subscribers to a new loan*, over and above the redeemable annu. or int., upon the credit of which the loan was supposed to be made. They were granted, not as the proper fund upon which the money was borrowed, but as an additional encouragement to the lender. Thus in 1745, each subs. of £100 to the Gov. Lottery, was entitled to a life annu. of 9s. for each ticket of £10 taken; being at the rate of £4 10s. p.c., in addition to an annu. of £3 p.c. p.a. on the total amount so subs., such annu. being free from all taxes. The lives nominated on this occasion were included in Mr. Finlaison's obs. No. 2 (1829).

In the case of *Lawley v. Hooper*, which arose in 1745, and has since become a leading case in relation to *life annu.*, Lord Chancellor Hardwicke decided that the grant of an annu. by a borrower for his life, with a proviso for *redeeming* or *repurchasing* it, upon giving six months' notice to the lender, was a *mere loan and usurious*, and decreed redemption on payment of the purchase-money with legal int. On this occasion he said: "I really believe that ninety-nine in one hundred of these bargains are nothing but loans turned into this shape to avoid the Statute of Usury." And it was so. We shall have occasion to recur to the subject again. [REDEEMABLE ANNU.]

In 1746, under the authority of 19 Geo. II., c. 12—*An Act for granting to His Majesty several rates and duties upon glass, and upon spirituous liquors, and for raising a certain sum of money by annu., and a Lottery, to be charged on the said rates and duties, etc.*, it is provided (sec. 64):

And for the greater encouragement of persons to become contributors to the lottery hereinbefore mentioned, be it enacted, etc. That all and every the person and persons who shall advance and pay unto such receiver or receivers, etc., at or before the respective days or times, and in the respective proportions hereinbefore directed, the principal sum of £100, for the purchase of ten tickets in the said lottery, shall for or in respect of the said principal sum of £100 so to be advanced and paid, be entitled to have and receive, at the receipt of His Majesty's Exchequer, during his, her, or their own life, or the life of some other person to be nominated by him, her, or them, or by his, her, or their assigns, an annu. of £9, being computed after the rate of 18s. p.a. for such ticket, and so in proportion for any greater number of tickets, over and above the annu. of £4 p.c. p.a. made payable by this Act to each contributor.

Making £13 p.c. p.a. during the continuance of the life, and £4 in perpetuity.

In a second set of Exchequer life annu. issued during this year (1746), a very large proportion of the cap. was supplied by Dutchmen, who almost without exception nominated children, and in a decided majority girls. This was not merely the result of accident or prejudice. The Dutchmen were really well informed upon the subject. Kerseboom's "Third Essay" had appeared four years previously, showing in point of longevity a decided advantage on the side of females. The English contributors of this period were selecting nominees of either sex or age, indifferently up to 50 or 60. It was another instance of knowledge being power. These lives were included in Mr. Finlaison's obs., 1829.

In 1746 Mr. Richard Hayes pub. a 2nd ed. of his work on annu. under the following title:—*A New Method far Valuing of Annu. upon Lives*; together with many useful

examples and instructions for valuing of single lives ; two or more lives ; lives taken in with other lives ; annu. in expectation ; an instance in the Mercers Co. ; estates for any certain term of years, as freeholds, leaseholds, and reversions, without any decimals, etc. The whole being made easy to a common capacity.

There is nothing in this ed. calling for special remark.

In the same year M. De Parcieux pub. his famous essay on the probable duration of human life, in which he gave several valuable tables of mort. deduced from the Mortuary Registers of different religious houses in France, and from the lists of the nominees in the French Tontines ; also a table of the *Values of annu. on single lives*, at three rates of int., calculated from his table of mort. for the tontine annuitants. The work commences with an algebraical theory of annuities certain ; and became very popular.

We give here the annuity values deduced from his table, for quinquennial periods : [DE PARCIEUX'S TABLE OF MORT.]

In 1747 Mr. James Hodgson, F.R.S., pub. : *The Valuation of Annuities upon Lives deduced from the London Bills of Mort.* The work is chiefly of a demonstrative character in opposition to merely imaginary methods ; and the annuity values are extended to four places in decimals. He says by way of preface :

It is now some years since I undertook the trouble of computing the following Tables, and the principal motive that induced me to do it was, that at that time the Tables most in use were founded upon the Bills of Breslaw.

At Breslaw, one half of the people that are born live till they are about 41 years of age ; at Lond. one-half die before they arrive at the age of ten years, which must necessarily make a considerable alteration in the chances of life, as well as in the value of the annu.

The method of putting down the ages of the several classes of people that die within the bills of mort. (for which we are indebted to Mr. Valens Comyn), has furnished us with ample matter to found the computations upon.

The easy way of raising money for publick uses by granting annu. upon lives, has met with so great encouragement, that there is no room to doubt that it will be carried down to future times.

The frequent entails upon estates by wills ; the granting of leases upon the lives of persons of different ages and differently interwoven, have rendered a true estimate of the values of lives, according to the present circumstances of the times, of very great consequence ; and to this end the utmost care and pains have been taken to render the tables true and exact ; and if any mistake may have happened (which is not impossible in a work that requires such a vast number of calculations), it is to be hoped the candid reader will pass a favourable censure upon it.

After having explained in detail the methods by which his values were deduced, he says :

It is remarkable that the highest value of a life is when the person is about 6 years of age, and that from the birth to that time the value of lives decrease, as they do from that time to the utmost extremity of old age ; that a life of 1 year old is nearly equal in value to a life of 25 years old ; that a life of 2 years old is nearly equal in value to a life of 77 [years] old ; that a life of 3 years old is nearly equal in value to a life of 12 years old ; that a life of 4 years old is nearly equal in value to a life between 9 and 10 years ; and that a life of 5 years is nearly equal in value to a life of 7 years of age ; and hence arose the custom of putting the value of the lives of minors upon the same value with those of a middling age, which at the best is but a bold guess, and made use of for no better reason, than that they knew of no better way to find the true value.

The above is an abstract of his Tables of life annu. values, 4 p.c. We shall have occasion to notice this work again under B. OF MORT., and LOND. T. OF MORT.

In 1748 Mr. James Dodson, F.R.S., pub. the 1st vol. of the *Mathematical Repository*, in which was contained various problems and solutions bearing upon annu. He strongly recommended the hypothesis of De Moivre as the most eligible means for determining the value of annu. until the results derivable from the Lond. bills should be more worthy of confidence (see again 1750 and 1755).

In the great usury case of *Chesterfield v. Janssen*, heard before Lord Hardwicke in 1750, it was said by counsel : " This extravagance [of borrowing] has estab. a trade of annu. and post-obits, universally exclaimed against. The ruin of a man who falls into this method is declared not to be far off : he ruins his estate without spending half." We shall have occasion to notice this case further in other parts of this work.

A 3rd ed. of De Moivre's work on annu. was printed in 1750. There were no material alterations from the 2nd ed.

In 1751 Mr. Weyman Lee pub. a valuation of annu. and leases certain for a single life. In this work he attempted to refute the various charges of error, etc., which his former

TABLE—4 p.c.

Age.	Years' Purchase.
10	19'008
15	18'502
20	17'938
25	17'420
30	16'810
35	16'084
40	15'133
45	13'904
50	12'526
55	11'173
60	9'713
65	8'039
70	6'394
75	4'945

Age.	Years' Value.	Annu. £100 will Purchase.
1	13'9428	£ 7 3 5
5	17'4788	5 14 5
10	17'2738	5 15 9
15	16'2093	6 3 5
20	14'8901	6 14 4
25	13'9187	7 3 8
30	13'0828	7 12 10
35	12'3051	8 2 6
40	11'5424	8 13 3
45	10'9689	9 2 4
50	10'1920	9 16 3
55	9'3941	10 12 11
60	8'4860	11 15 8
65	7'4620	13 8 0
70	6'6315	15 1 7
75	5'8025	16 19 6
80	4'3781	22 16 10
85	3'1965	31 6 4
90	1'8506	54 0 9

publication (1737) had elicited. It seems but fair to hear what he has to say after the benefit of the controversy which he had raised :

Some time ago, I pub. an essay on the method of ascertaining the value of annu., and of leases reduced to annu. certain for one or more lives; and therein I laid down this position as the ground-work, viz., that the even chance of the duration of a life, computed once only for the whole life, was the sole true measure of the value of an annu. depending on that life. But since some persons have made obs. on this my method, and others have form'd valuations of these estates, and have defended and still adhere to the method prescribed by Dr. Halley, I think it will not be amiss to make some remarks upon them, partly to answer and remove the objections which have been offer'd, but chiefly, because it gives me an opportunity to maintain, and further confirm the fundamental position.

Amongst my adversaries, Mr. H. B. appears to be most potent, and indeed the only one who deserves any serious consideration; and the question between him and me is, whether Dr. Halley's rule or mine be the righter for forming an estimate of the value of annu. on a single given life. The Dr.'s rule is to find the value of the annu. for each year of the given life to an 100: which is done and can be no otherwise done but by computing the chances of mort. arising in each year, and deducting the value thereof out of the value of an annu. absolute for that year, and then to put together all the values so collected, and the sum total is the value of the annu. for the given life. Mine is, to find to what term of years any life is equal, or an even chance may prob. continue, and the value of an annu. for the given life will be the same as the value of an annu. for that term of years.

It may be said of this writer: that he was a gentleman who refused to be convinced. [MORT. OBS.]

In 1752 Mr. Simpson pub. his *Select Exercises*, being a supplement to his doctrine of annu.; wherein he gave new tables of the values of annu. on two joint lives, and on the survivor of two lives, much more copious than those he had inserted in the principal work; but these were also calculated from his Lond. table of mort.

In the same year the 4th ed. of De Moivre's *Treatise on Annu.* was pub. It contained two extra tables for single life annu. at the rate of 3 and $3\frac{1}{2}$ p.c. int.; and some directions as to the employment of int. tables in general.

In 1753 a 2nd vol. of the *Mathematical Repository* was pub.; and it contained a numerous collection of annu. questions resolved in accordance with De Moivre's hypothesis. Mr. Dodson, its editor, had calculated to 3 places of decimals a complete set of annu. tables for single lives, at the several rates of 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, and 6 p.c. int., thus incidentally offering the fullest embodiment of De Moivre's hypothesis extant.

In 1753 Mr. James Hardy pub. *A Complete System of Int. and Annu., Founded upon New, Easy, and Rational Principles*; containing the whole bus. of int. and annu. for a fixed time, in perpetuity, or depending on single lives or any number of joint or successive lives either in possession or reversion, with a great variety of questions, etc., "useful for landed and monied men, lawyers, stewards, and all such as have any concern with annu." In the questions so proposed to be discussed is mentioned "Insurances on Lives"—almost the first time any work had made distinct mention of the bus.; but there was nothing in the work itself to justify the expectation of the title-page on that subject. Mr. Hardy may be properly called a disciple of Weyman Lee's.

In 1754 Mr. Stonehouse pub. *The Valuation of Annuities on Lives deduced from the Lond. Bills of Mort.* He says:

My principal motives to undertake the calculating a fresh set of tables from the Lond. Bill of Mort. (which most certainly are the properest foundation for the city of Lond. as the Bills of any other place would also be for that place) were, that the state of the bills of 20 years hereunto annexed, affords conclusions somewhat different from those formerly obtained from the same bills of 7, 8, or 10 years; that all the tables founded upon the Lond. Bills (except Mr. Simpson's, in which there is an alteration made from the bills by increasing the number of the living in all the ages under 25) are pub. without practical rules, or with such as are false, uncertain, and inconclusive; and I think it very unreasonable that a poor citizen of London should be made to pay for an annu. according to the prob. of the duration of life at Breslaw, where, as appears from the bills, one-half of the people that are born live till they are about 43 years of age, whereas at Lond. one-half die before they arrive at the age of 13.

The annexed is an abstract of his table of annu. values, 5 p.c. deduced as stated.

In the same year Mr. Dodson addressed a letter to the Royal Society, *Concerning the Value of an Annu. for Life, and the Prob. of a Survivorship*; in which he refers to De Moivre's calculation of the proportionate ann. payment in relation to the exact date of death, and offers a simple method for determining the value. This was pub. in *Phil. Trans.*

In 1754 also Mr. Edmond Hoyle pub. *An Essay towards making the Doctrine of Chances easy to those who understood vulgar mathematics only.* To which was added some useful tables on annu. for lives, viz.:

1. The value of an annu. of £1 a year upon a single life, int. of money at 3 p.c. calculated according to the Lond. Bills of Mort. 2. Ditto at 4 p.c. 3. Ditto at 3 p.c. according to the Breslau Table. 4. Ditto, 4 p.c. Then follow some interest tables.

In 1755 the 3rd vol. of Dodson's *Mathematical Repository* was pub., containing farther problems relating to annu. on lives, many prob. relating to leases for lives, and

finally some questions relating to Life Ins.—the first which had distinctly treated of the subject; see LIFE INS., HIST. OF.

The 3rd ed. of De Moivre's *Doctrine of Chances*, pub. in 1756, after the author's death, again contained a species of appendix, relating to life annu.

In 1756 also Mr. Dodson contributed to the *Phil. Trans.* a *Table of Annu. Values based upon a Compound Table of Mort. constructed by Dr. Brackenridge from the Breslau and Lond. Bills of Mort.*

In 1757 all subs. of £100 to the Loan on 3 p.c. annu. then raised, were allowed by way of bonus a life annu. of £1 2s. 6d.; and a like annu. in respect of each add. £100 subs., irrespective of age. These lives were included in Mr. Finlaison's Obs., 1829.

In the same year Richard Gaddesbury pub. a *Treatise on Decimal Arithmetic*, in which was contained some obs. on annu. for years certain, and also for lives.

In 1760 the learned Euler gave a formula by which the value of an annu. on a single life of any age may be derived from that of an annu. on a life one year older; which formula was included in that given by Mr. Simpson 18 years before, for effecting the same purpose in case of any number of joint lives; and by this compendious method M. Euler calculated a table of the values of single lives from M. Kerseboom's table of mort.—*Milne*. He (Euler) pointed out the great necessity that asso. granting annu. should be founded on sound principles, and managed with prudence.

In this same year a writer in the *Gentleman's Mag.*, with Buffon's table before him, said :

Then with regard to the purchase or sale of annu. for life, we may from this table, and the tables of compound int., easily see what a person of any age ought to pay for an annu. for life; because in this table we may see what number of years a person of any age has an equal chance to live, and in the tables of compound interest we may see what is the present value of any annu. for that number of years at the common rate of int. Thus, a person of 30 has by this table an equal chance to live 28 years, and by the table of compound int. we may see that the present value of £1 p.a. for 28 years, reckoning int. at 3 p.c., is a little above £18 15s. Therefore a person of that age ought to pay, at the present low rate of int., nearly 19 years' purchase for an annu. for life: whereas if the common rate of int. were still at 5 p.c. he ought to pay full 15 years' purchase; and as there are always more sellers than buyers, the common price was generally under this rate.

The fallacies which lurk in the above were fully pointed out by a Mr. W. Chapple, in the following number of the *Mag.*

In 1762 the *Equitable So.* was founded, and appears upon the authority of Dr. Price to have entered upon annu. bus. He says, "It assu. any sums or rev. annu. on any lives, for any number of years, as well as for the whole continuance of the lives, at rates settled by particular calculation." We believe that in later years the So. has not transacted any annu. bus.

In 1762 Mr. Benjamin Webb pub. *The Complete Annuitant, consisting of Tables of Int. Simple and Compound*; which were declared by their author to be the "most complete, extensive, and useful set hitherto pub.," and to be constructed on a true and familiar plan. [MORT. TABLES.]

In 1763 Mr. Benjamin Martin pub., in his work on *Decimal Arithmetic*, Tables of compound int. and annu. Among the latter a reprint of Halley's table of values of annu. on lives.

About 1763 an Annu. So. was founded in the City of Salisbury, for the purpose of raising a fund sufficient to allow the widow of every person who had been a member three years an annuity of £30 during life.

In 1765 Herr Lambert pub. in Germany the first part of a treatise on annu. The third part was not pub. until 1772. [MORT. TABLES.]

On the 1st January, 1765, the *Lond. Annu. So.* was founded, with a view to make ann. provision for widows. The contribution was to be £5 5s. p.a., payable half-yearly; and for this an annu. of £20 was to be given to every widow during widowhood, provided her husband lived one year after admission; of £30 if the husband live 7 years; or £40 if he lived 15 years. There was a £5 5s. admission fee for every member not exceeding 45 years of age; with £5 5s. extraordinary for every year above 45.

In 1766 the *Laudable So.* of Annuitants was founded. The subs. was the same as in the *London*. If the husband lived but one year, the widow was entitled to an annu. of £10; if 2 years, £15; if 3 years, £20; 4 years, £25; 7 years, £30; 10 years, £35; 13 years, £40. No member was admitted beyond 45 years of age. The entrance fee was £5 5s.; there were no other payments.

Dr. Price in the first instance (1771), and Mr. Wm. Dale in 1772, drew very marked attention to the promised advantages held forth by each of these sos. They proved to demonstration that the annu. proposed to be granted were much larger than the subs. justified; and by means of the controversy which ensued the science of life contingencies became in some measure popularized. This subject is fully discussed later in this art.

In this year the Gov. raised a further sum by the sale of life annu. and a lottery. There were no special features. Some of the lives of this year were included in Mr. Finlaison's Obs. No. 2 (1829).

A parliamentary return pub. in 1767 showed that the *nine-shillings* life annu. given by way of bonus on lottery tickets in 1745 had orig. involved an ann. charge on the Treasury

of £22,500, reducible as the annuitants died off. The charge was *then* reduced to £17,314. The eighteen-shillings annu. which constituted the lottery bonuses in 1746 involved an orig. charge of £45,000 p.a. That had become reduced to £34,465. The £1 2s. 6d. bonus on the 3 p.c. annu. of 1757 had involved an ann. charge of £33,750 ; but it had become reduced by lives falling in to £31,558.

In 1768 Mr. J. Rowe, of Exeter, pub. *Letters relative to Societies of Annuitants, etc.*, by which the members were informed of the insufficiency of their payments in relation to the advantages promised by the founders and expected by the subs.

In 1769 was founded the *So. for Annu. Encroaching to the Survivors* : in other words, a scheme of Tontine annu. The So. had some special features, but a complete outline of it will be given under its alphabetical title.

About this period there were estab. in Lond., in add. to the sos. we have particularly mentioned, the following : The *Amicable So. of Annuitants* ; The *Provident So.* ; The *So. of Lond. Annuitants* ; The *Equitable So. of Annuitants* ; The *Westminster Union So.* ; The *London Union So.* ; The *Consolidated So.* ; The *Public Annu. So.* ; The *Rational So.* ; The *Friendly So. of Annuitants* ; and prob. various others whose names are now lost or forgotten. Similar sos. were also founded in the Provinces. We have the articles of one estab. at Romsey in Hants, in 1770. The So. was founded at the *Dolphin Inn*, and its principal art. were printed for circulation. Members were to be above 21 and under 40 years of age. There was to be an entrance fee, commencing at £2 2s. for the early members, and increasing to £5 5s. or more when a 100 members had been obtained. The ann. subs. was to be £3, payable quarterly, with small extra payments to Sec. and Treasurer, and 2s. 6d. towards the "annual feast." The advantages promised in return were the following :

VII.—That the widow of every person who shall have been a member of the So. for the space of three years, and shall have regularly paid his quarterly and ann. payments during that time, shall be entitled to receive from the stock of the said So. an annu. or clear yearly sum of £30 during her widowhood, provided she shall have been lawfully married six calendar months before his death ; which annu. shall be paid by equal sums payable quarterly. . . . But if any such widow shall be married again to any person of good character (not being a soldier or seaman), and he shall be willing to become a member of the So. and shall notify the same to the Treasurers at the next monthly meeting after such marriage, he shall be admitted a member upon paying the then settled entrance fee ; and whenever he shall happen to die, such widow shall be restored to her annuity of £30 ; and in case he shall happen to survive her, he shall enjoy the same advantages as any other member, but in no other degree.

VIII.—That every member when he shall have been admitted full 15 years, and shall have in every respect complied with the estab. rules of the So., shall be entitled to receive from the said fund an annu. or yearly payment of £15 in case such member be then unmarried, and at least 45 years of age ; or in case he shall afterwards become a widower, which annu. shall commence, etc., and be paid quarterly. [The member might relinquish his personal annu., and any future wife, over 40, would be entitled on her widowhood to receive an annu. of £30. The member to continue his subscriptions.]

By art. No. ix., if the current income of the So. was not sufficient to provide the annu., the members to pay such add. quarterly or ann. sums as would make them good ; and by art. xiv., members might pay double subs., etc., and secure double advantages.

Mr. Baily, writing in 1813, and clearly referring to this period, says :

Nothing perhaps tended so much to destroy the numerous *Bubble Societies* which spang up about forty years ago : nothing, probably, opened so effectually the eyes of the public with respect to their delusive schemes, as the pub. of more correct and comprehensive tables of the values of life annuities, whereby the true value, which ought to be given in such cases was more accurately determined. And as one improvement in science generally leads on to another, this naturally opened the way to a more complete and comprehensive investigation of the subject ; so that at the present day a new, a distinct, and an interesting branch of analysis has arisen, which was unknown to mathematicians of a former period.

About this period also the two following adv. appeared very frequently in the daily newspapers :

Eleven p.c. for life given to all ages.—Any persons desirous of purchasing annu. for their own or any other life or lives, may have the same secured on Freehold Estate, and regularly paid at a Banker's in London. For farther particulars apply to W.R., at Tom's Coffee-house, Cornhill.

Eleven p.c. for life given to *all* ages.—Annuity office, numb. 8, Pope's Head Alley, Cornhill,—Persons inclined to purchase annu. for their own lives, or the lives of others, of any age, may have the same well secured, and regularly paid half yearly, at a Banker's in Lond. Further particulars may be had by applying personally or by letter to this office.

We have now to mark another, and an important epoch in the hist. of life annu. This dates from 1771, the year in which Dr. Price—the compiler of the NORTHAMPTON TABLE of Mort.—pub. the first ed. of his famous work : *Obs. on Reversionary Payments ; on Schemes for Providing Annu. for Widows, and for Persons in Old Age ; on the Method of Calculating the Values of Assu. on Lives*, etc. ; to which was added, "Four Essays on different subjects in the doctrine of life annu. and political arithmetic." The date of this work is erroneously given by some writers as 1762 ; by several others as 1769. The first ed. now lies before us dated 1771.

Dr. Price, in the preface to the work just named, tells us how his attention became drawn to the subject :

A few years ago, many gentlemen of the first eminence in the law formed themselves into a *society* for providing annu. for the widows of all such persons in judicial offices, barristers, civilians, and solicitors, as should choose to become members. A plan was agreed upon and printed ; but some doubts happening to arise with respect to it, the directors resolved to ask the opinion and advice of

three gentlemen, well known for their skill in calculation. This occasioned a further reference to me ; and the issue was, that the plan being found to be insufficient, the whole design was laid aside.

About the same time, several other societies were formed with the same views ; but all on plans alike improper and insufficient. Finding, therefore, that the public wanted information on this subject, I was led to undertake this work, imagining that it might be soon finished, and that all I could say might be brought into a very narrow compass. But in this I have been much mistaken. A design which I at first thought would give little trouble, has carried me far into a very wide field of inquiry ; and engaged me in many calculations that have taken up much time and labour. I shall, however, be sufficiently rewarded for my labour, should it prove the means of preventing any part of that distress, which is likely to be hereafter produced by the sos. now subsisting for the benefit of widows. I have proved the inadequateness of their plans, by undeniable facts and mathematical demonstration. I have further given an account of some of the best plans, which are consistent with sufficient prob. of permanency and success. Should, therefore, any of these sos. determine to reform themselves, or should any institutions of the same kind be hereafter established, they will here find direction and assistance.

He adds :

The general disposition, which has lately shown itself to encourage these sos. is a matter of the most serious concern, and ought I think to be taken under the notice of the Legislature. The leading persons amongst the *present* members will be the first annuitants ; and they are sure of being gainers : and the more insufficient the scheme is on which the so. is formed, the greater will be the gains of the first annuitants. The same principle, therefore, that has produced and kept up other *bubbles* has a tendency to preserve and promote these ; and for this reason, it is to be feared, that in the present case no arguments will be attended with any effect.

He adds the following foot-note by way of confirmation to the preceding :

This apprehension has been verified by fact. At the beginning of last winter a letter was pub. to the *Provident So. containing a clear proof of the insufficiency of the plans of all these sos.* It was at least to be expected that such a pub. would prevent the rise of new sos., formed on more inadequate plans. But this was so far from being the effect, that soon afterwards a so. sprung up which calls itself the *Rational Annu. So.* ; and which, though it does not take half the values of the annuities it promises, has had the shamelessness to assure the public that it is formed on a plan *incontestably durable.* The *Consolidated*, the *Public Annuitant*, and the *Westminster Union Sos.* are yet worse inst. which have been since formed ; and there may, for ought I know, be many more ; for indeed all *Lond. seems now to be entering into asso. of this kind.*

He returns to his text, and continues :

The consideration that "the gain made by some of these sos. will be so much plunder taken from others," ought immediately to engage all to withdraw from them who have any regard to justice and humanity ; but experience proves, that this argument, when opposed to private interest, is apt to be too feeble in its influence.

It cannot be said with precision how long these sos. may continue their payments to annuitants after beginning them. A continued increase, and a great proportion of young members, may support them for a longer time than I can foresee. But the longer they are supported by such means, the more mischief they must occasion. So a tradesman, who sells cheaper than he buys, may be kept up for many years by increasing bus. and credit ; but he will be all the while *accumulating* distress ; and the longer he goes on, the more extensive ruin he will produce at last.

It is impossible that any one could have spoken more earnestly, and more to the point than this. He proceeds to give the reader an outline of the contents of the work :

In the first essay I have made many obs. on the expectations of lives, the pernicious influence of great towns on health and manners and pop. ; the increase of mankind ; and other subjects in the doctrine of annu. and political arithmetick. In the last essay I have stated carefully the proper method of forming tables of the prob. of human life, from given obs., and in the appendix, besides several new tables, I have thought it necessary to give Mr. Simpson's Tables of the Values and expectations of Lond. lives ; and all the other tables which can be wanted in the perusal of this work.

The plan of the work, and its method, may be gathered by those who are not already familiar with these, by the following :

Question 1. A set of married men enter into a so. for securing annu. to their widows. What sum of money, in a single present payment, ought every member to contribute, in order to entitle his widow to an annu. of £30 p.a. for her life, estimating int. at 4 p.c. ?

Answer. It is evident that the value of such an expectation is different, according to the different ages of the purchasers, and the proportion of the age of the wife to that of the husband. Let us then suppose that every person in such a so. is of the same age with his wife, and that, one with another, all the members when they enter may be reckoned 40 years of age, as many entering above this age as below it. . . .

He then reasons out the value as demonstrated by the hypothesis of De Moivre, and the table of Simpson ; and he offers the following obs. regarding the labours of these gentlemen :

Mr. De Moivre has calculated the values of single lives on the supposition of an equal decrement of life thro' all its stages till the age of 86, which he has considered as the utmost possible extent of life. . . . This hypothesis eases very much the labour of calculating the values of lives ; and it is so conformable to Dr. Halley's Table of Obs. that there is little or no reason for distinguishing between the values of lives as deduced from this table, and the same values deduced from the hypothesis.

In order to avoid putting the reader to trouble, I have given this table at the end of this work, and I have also given two other tables, which I have formed from the *B. of Mort. at Northampton and Norwich.* These last tables answer more nearly to Mr. De Moivre's hypothesis than even Dr. Halley's table ; and the difference between the values of *single* and *joint* lives by the hypothesis, and the same values computed strictly from the tables, is generally less in these tables than in Dr. Halley's, as will be shown in the last essay. When, therefore, in the course of this work the values of single and joint lives are mentioned, as given agreeably to Dr. Halley's, it must be understood that they are taken from Tables VI. and VII. [De Moivre's single and joint lives] in the appendix, and given in strict agreement only to the hypothesis ; that for this reason they are still more conformable to the Northampton and Norwich Tables.

It was in this quiet manner that the NORTHAMPTON TABLE, which has since played

such an important part in ins. hist., was first introduced by its founder ; he himself in the same work using De Moivre's hypothesis in his calculations—perhaps chiefly because no money values had then been deduced from his own table. We must now note the course he pursued regarding lives resident in Lond., and his reasons for so doing :

The inhabitants of Lond., as is well known, not living so long as the rest of mankind, the values of single and joint lives there are considerably less than in any other place where obs. have been kept. *Whenever, therefore, I have had Lond. lives in view, I have given particular notice of it, and taken their values from Mr. Simpson, who has calculated them with much accuracy from the Lond. tables of obs.*

The learned Doctor then proceeds with a series of propositions in the shape of questions, framed with great ingenuity, to meet the circumstances of the various annu. sos. then existing in Lond. and elsewhere ; and he frames his answers in such a manner as to convey the most clear information on the topic under discussion—always indicating the source of information he calls to his aid ; and even analyzing its accuracy or otherwise. By these means he gained the confidence of his readers, and ought to have gained the confidence of the persons in the management of the asso. upon which he commented. His next step was to take up the schemes of two of the sos.—the *Laudable*, and the *Lond. Annuitants*—and to apply in direct form the conclusions of his preceding reasoning to the circumstances of those asso. In this we do not propose to follow him here. When we deal with the individual hist. of those offices, we shall have occasion to note some of his obs., as also those of Dale on the same asso. We propose here to subjoin some of his general obs. on this part of his investigation :

There are in this kingdom several inst. for the benefit of widows, besides the two on which I have now remarked ; and in general as far as I have had any information concerning them, they are founded on plans equally inadequate. The motives which influence the contrivers of these inst. are without doubt *laudable* ; but they ought, I think, to have informed themselves better. This appears sufficiently from what has been said ; but I will just mention one further proof of it.

The *Lond. Annu. So.* promises that if in 21 years, and the *Laudable So.* that if in 25 years, it shall appear that there has been all along an ann. surplus in favour of the sos., it shall be employed in either raising the *annu.*, or in sinking the ann. payments. Now, they may be assured, that if at the end of these periods, they should not be possessed of a considerable surplus, the true reasons will be their having granted much higher annu. than the ann. contributions are able permanently to support : for it has been demonstrated, that the number of annuitants, and consequently the amount of the ann. expenses, will go on increasing for a long course of years beyond these periods. The effect therefore of carrying into execution this regulation, will be precipitating that bankruptcy which would have come too soon had there been no such regulation.

It has been said in defence of these sos. that the deficiencies in their plans cannot be of much consequence, because their rules oblige them to preserve a constant equality between their income and expenses, by reducing the annu. as there shall be occasion. And from hence it is inferred that they can never be in any danger of a bankruptcy. In answer to this, it has appeared, that the time when they will begin to feel deficiencies is so distant that it will be too late to remedy past errors, without sinking the annu. so much as to render them inconsiderable and trifling. *All that is given too much to present annuitants is so much taken away from future annuitants.* And if a scheme is very deficient, the first annu. may for 30 or 40 years receive so much more than they ought to receive, as to leave little or nothing for any who come after them. *Deficient schemes* therefore are attended with particular injustice ; and this injustice will be the same, if, instead of *reducing* the annu., the ann. payments should be increased ; for all the difference this can make will be, to cause the injustice to fall on *future contributors* instead of *future annuitants*.

But what requires most to be considered here is, that, after either the annu. have been for some time in a state of reduction or the contributions in a state of increase, it will be seen that these sos. have gone upon wrong plans, and therefore they will be deserted and avoided ; the consequence of which will prove still greater deficiencies in their ann. income, and a more rapid desertion and decline, 'till a total dissolution and bankruptcy will take place. This will be the death of most of the present sos. for providing for widows, if they continue to be encouraged, and do not soon alter their plans. And at that period the number of annuitants will be greater than ever ; whose annuities, having no other support than the poor remains of a stock always insufficient, will be soon left, without the possibility of relief, to lament that ignorance and credulity which gave rise to these sos. and which had so long supported them.

Anything more truly and rationally prophetic was never written. In a later part of his work he makes a sort of individual or personal appeal in this form :

As the persons who conduct these schemes can mean nothing but the advantage of the public, they ought to listen to these obs. At present their plans are capable of being reformed ; but they cannot continue so always : for the greater the number of exorbitant payments they now make to annuitants, the more they consume the property of future annuitants, and the less practicable a retreat is rendered to a rational and equitable and permanent plan. They should therefore *immediately* either *reduce* their schemes, or change them into one of those which I have proposed. But I am afraid this is not to be expected. The neglect with which they have received some remonstrances that have been already made to them gives reason to fear that what has been now said will be in vain ; and that those who are to come after them must be left to rue the consequences of their mistakes.

It is perhaps easier to understand the unwillingness of the managers to attempt reform, when the exacting character of the requirements of the learned Doctor upon them is seen :

Should any of these sos., sensible of their mistakes, resolve to reform themselves, they ought to consider that this cannot be done by only obliging *future* members to pay the just values of the annu. promised them. All the *present* members must likewise, besides raising their payments, *make compensation for what they have hitherto paid too little* ; and this compensation is to be calculated in the following manner.—*Find the whole amount, to the present time, of the payments which have been made.* Subtract this from the whole amount of the payments which *should* have been made ; and the *remainder* will be the compensation required.

This is a fair specimen of his method of handling bus. matters. His remedies were thorough, and admitted of no compromise.

About this period there had been various proposals made with a view to paying off the National Debt ; and one of the proposals was that the debt might be discharged by means of Life Annu. Dr. Price offered, in his Essay on the National Debt, forming part of the work now under notice, the following obs., with a view to show "how vain an imagination this is":

Let us suppose that £33,333,000 is to be paid off by offering to the public creditors life annu. in lieu of their 3 p. cents. A life at 60, supposing int. at $3\frac{1}{2}$ p.c., and the prob. of life as in the *Breslaw*, *Norwich*, and *Northampton* Tables of obs., is worth 9 years' purchase. A life at 30 is worth 15 $\frac{1}{2}$ years' purchase. Certainly therefore no scheme of this kind would be sufficiently inviting, which did not offer 8 p.c. at an average to all subs. Let us, however, suppose that no more than $7\frac{1}{2}$ is given ; and that there are 33,333 subs. at £1000 stock each, for which a life annu. is to be granted of £75, or for the whole stock subs. 2 $\frac{1}{2}$ millions. A million and a half extraordinary, therefore, must be provided towards paying these annu.

Let us further suppose, that the subs. are persons between the ages of 30 and 60 ; and that the numbers of them at all the intermediate ages are in the same proportions to one another, with the proportions of the living at these ages, as they exist in the world, or, as they are given in the tables of obs. Let us again suppose that as these annu. die off, they are immediately replaced by others who are continually offering themselves at the same ages and in the same proportional numbers at these ages, with those of the orig. subs. at the time they subs. : in consequence of which the whole number of annu. and the whole number of annuitants will be kept always the same. In these circumstances it will be 30 years at least before a number will die off equal to the whole number : that is before 33 millions of debts will be annihilated. But had the extraordinary million and half provided for paying these annu. been employed during this time in paying off so much of the debt at *par* every year, extinguishing at the same time every year an equivalent tax, 45 millions would have been paid. But had the savings also instead of being sunk as they arose, been employed in the same manner, 71 millions would have been paid.

The nation therefore must, without doubt, lose greatly by all schemes of this kind ; and yet they have been often much talked of ; and indeed I shall not wonder, should I hereafter see an attempt made to pay off the National Debt in this way.

Among the various tables included by Dr. Price in his work were the three following :

1. Table showing the value of an annu. of £1 on a single life, according to Mr. De Moivre's hypothesis, "and therefore nearly according to the prob. of life at Breslaw, Norwich, and Northampton." This table is the same with that pub. by De Moivre in his *Treatise on Life Annu.* It was carried as far as the age of 79 to 3 places of decimals by Mr. Dodson in his *Mathematical Repository* (vol. ii. p. 169) ; and is here carried on to age 85.

2. Table showing the prob. of life at Northampton. This was the first appearance of the famed NORTHAMPTON TABLE OF MORT., under which title we shall give a complete account of the data on which it was founded.

3. Table showing the prob. of life at Norwich. We shall give a full account of this table under NORWICH TABLE OF MORT.

The values of annu. on lives were not at this date deduced from these last-named tables ; but the following specimen table furnishes the values at certain specified ages for the purpose of comparison. Int. at 4 p.c. in each case :

Age.	Breslau Table.		Norwich Table.		Northampton Table.		De Moivre's Hypothesis.
12	17.61	.....	17.48	.....	17.20	.....	16.69
20	16.49	.....	16.41	.....	15.93	.....	15.89
30	14.77	.....	15.15	.....	14.85	.....	14.68
40	12.90	.....	13.36	.....	13.10	.....	13.19
50	10.87	.....	11.13	.....	11.25	.....	11.34
60	8.58	.....	8.54	.....	9.02	.....	9.01
70	5.59	.....	5.99	.....	6.26	.....	6.06
75	4.21	.....	4.86	.....	4.79	.....	4.29

As has been before observed, the values by the Hypothesis come nearer to the values of the Norwich and Northampton than the Breslau table.

In 1772 there was published a work : *Calculations deduced from First Principles, in the most Familiar Manner, by Plain Arithmetic : for the Use of the Soss. instituted for the Benefit of Old Age: intended as an Introduction to the Study of the Doctrine of Annu.* "By a member of one of the Soss." The work at p. 247 bore the initials "W. D.," and is now known to have been written by William Dale, of whom we shall give some account in alphabetical order. The author says :

Dr. Halley, Mr. De Moivre, and Mr. Simpson have treated of annu. very copiously many years since. If their manner seemed obscure to the generality of readers, there have been elucidations pub. ten months ago by the ingenious Dr. Price ;—yet, notwithstanding this, the directors, managers, etc., of the sos. instituted for the benefit of old age, still continue ignorant of the subject. This is the most favourable construction : for otherwise how could honest men persist in pub. promises that decoy, deceive, and plunder the unsuspecting believer ?

When the reader shall have perused the following sheets, he may cease to wonder at their want of knowledge ; for he will meet with more than one instance of their *unwillingness* to be informed, and of their determination not to *understand*. . . . As to the majority of the members who support such proceedings by their votes, they are not only parties concerned and still less conversant in the bus., but also seem to enjoy the delusion like a pleasing dream ; and would much more regret the being waked out of it, than be thankful to the friend who by it should prevent the most vexatious disappointment, or the most imminent misfortune.

To this may be imputed the cold reception all endeavours meet with which tend to destroy the flattering hope, and their readiness to listen to anything, however false, which soothes it. Such

counsel as accords with the wishes of the heart steals imperceptibly its attention and confidence; while honest truth is disregarded, rejected, and huffed for an intruder. . . .

From such members their censure is the praise, their reproaches are the thanks which the writer must expect. They may prove to be but partial readers of this essay, and will more eagerly collect its faults, though the catalogue be ever so long, than usefully apply one remark to the reformation of (what they maintain has need of none) the plan of their so.

We have now, we think on sufficient authority, presented a picture of the condition of the ANNU. ASSO. of Gt. Britain a century ago. It was essential, in view of events that follow, to make this clear.

Regarding Dale, the writer last quoted, it is clear, not only upon his own authority (see p. 85), but from collateral circumstances, that he had commenced an investigation into the position of these annu. asso. some time before Dr. Price's work was pub. Indeed the latter very early in his work refers to a letter which had been addressed (in Sept. 1771) to the *Provident* Annu. So., "containing a clear proof of the insufficiency of the plans of all these sos.;" and in that letter Dale said :

I have for some months had the schemes of the several sos. under consideration, and shall perhaps before Christmas pub. some calculations which will prove in the plainest manner that not one of them will be able to fulfil their engagements; that the different ages do not *pay the due proportion* to each other; nor are the terms of paying admission fine, and paying none, equal: and that a person to be admitted member of any one of them must pay now considerably more than any one (considered collectively) has done; which in some of the sos. is actually defrauding under false pretences; though yours partly escapes the censure by having pub. what every hundred members have paid, and therefore the state of your so. is not concealed.

However, the fame of Dr. Price really caused Dale's work to be passed over almost in silence; although the Doctor himself has testified that in this work "the principles on which the values of all annu. on single lives are determined, and the method of calculating them, are explained with the greatest clearness." We hope Dale, who was a man in humble position—a house steward in a nobleman's family—lived long enough to read the testimony of a contemporary author who so nearly altogether eclipsed him.

The object of the two authors being so similar, and their method of treatment being in many respects almost analagous, it should, and does, follow that the results respectively arrived at are very nearly uniform. For this reason we do not propose to follow Dale at any great length here. We shall have occasion to quote him in other parts of this work, and hope to rescue him from that entire oblivion into which he has so nearly fallen. He had not even a place in the British Museum Catalogue until we interfered on his behalf.

After elucidating the principles involved in the proper working of annu. asso., he sets up two imaginary sos.: the one he calls the *Impartial* So., and this is assumed to be "founded on honesty and just principles of calculation;" the other he calls the *Politie Gotham* So., which was intended to represent many of the then existing asso. He says:

Animadversions may be freely made on both of these; and the praise or censure that is due to either may be bestowed without prejudice or restraint, since no one can be an interested party in a so. that has no real existence. As the writer would wish to give no offence to any so. whatever that doth exist, but to preserve impartiality to all of them, 'tis hoped they will not apply more of what follows to themselves than what they certainly know to be apt and true.

The general inquiries which he proceeds to make regarding each of these sos. are the following:

1. What do the members pay in present money? that is the total of the value of the money paid down, and of half-yearly payments reduced to present money? 2. What annu. for life ought to be received, when aged 50, for the money paid, and according to age? 3. Whether the several ages pay in due proportion to each other, for annu. of equal value? and what is the difference? 4. Whether the tables with admission fine are equal to those without admission fine, and what is the difference? 5. What annu. each so. can afford to pay? 6. In what proportion to those who are members, or to the annu. that the cap. stock can afford, must a person now pay to become a member?

It must be admitted that the ground was pretty well covered by these interrogatories. The following is the picture he draws of the founders of his second imaginary so. It is a good deal more than a burlesque upon the real occurrences of the period:

For a specimen of cunning, ignorance, and dishonesty, let the institutors be imagined to reason in this manner:—As we are the founders of this so., it is very reasonable that ourselves should pay but little, if any, towards it; for we will contrive means somehow to make it succeed. And to make it more inviting to such as do not understand figures so well as us, let the nominal value be double its real value; for we can make a deduction out of the annu., each payment, to make it the same thing. If we promise £100 annu., we may deduct £25 every half-yearly payment, and so the real annu. would be but £50; and all those who should not perceive the deception would be fairly taken in. Now as to what sum should be paid for an annu. to commence when aged 50, *that* nobody, for it is impossible, can tell; but we may guess pretty nearly perhaps, if we consider that whatever we pay now will increase in a few years to a vast prodigious sum indeed! and consider, too, what an amazing number will die in the time and leave whatever they should have paid for our benefit. But the best of the scheme is, that a great number may become *poor*, and unable to pay their half-yearly dividends. Let all such forfeit what has been paid to our use; for by this 'tis hoped we shall get very great sums indeed. On the whole, if the age 40 pays £3 every half-year till aged 50 to receive £50 annu. for life after that time, surely it will be full sufficient for us, who have been at the trouble of calculating in this manner; and if we immediately raise the payments to double or treble of what we pay, it is but common justice: for those who partake of the benefit of our scheme should pay us handsomely; and let them pay an admission-fine besides, for that will make it better still for us.

The author volunteered his assistance to any so. to which it "should be thought serviceable."

In this year also a 2nd ed. of Dr. Price's *Observations*, etc., was pub., to which there

was a supplement containing "add. obs. concerning the schemes of the sos. for providing annu. for widows, and for persons in old age." After speaking of a new "short and easy" method which had occurred to him for trying the sufficiency of such schemes as he had in the previous ed. been speaking of, and giving a specimen of his mode of procedure, showing with what facilities the test might be applied, he remarks as follows :

How melancholy then it is to think of the encouragement that has been given to these sos. ? There are now in almost every part of this kingdom some inst. or other of this kind, *formed just as fancy has dictated, without any knowledge of the principles on which the values of life annu. and revs. ought to be calculated.* I can, however, with pleasure acquaint the public, concerning the two Lond. sos. of which I have taken more particular notice, that, consisting in general of gentlemen of character and sense, they have listened to the information which has been offered them ; and in consequence of it, either have already, or prob. will soon, resolve on such amendments of their plans as may render them permanently and effectually the means of the good intended by them.

I wish I could speak with the same satisfaction of the sos. in Lond. for providing for old age. It is true they are likewise endeavouring to reform ; but in general, as far as I know anything of them, so feebly and ineffectually as to leave little room to doubt but they will remain what they have hitherto been—DANGEROUS BUBBLES. Some of them in consequence of advancements, since the first pub. of this work, require now from those who apply for admission higher contributions. . . . The truth, however, is that reckoning int. at $3\frac{1}{2}$ p.c., their contributions are still in general near a half below what they ought to be. Is it possible then to speak of these asso. with too much severity ? Can any benevolent person see them, without concern, going on with schemes that have been demonstrated to be insufficient, and sure to end in confusion and calamity ? One so. boasts that it consists of 1100 members ; and another that it possesses an income of £8500 p.a. What is this but shamelessly boasting of the extensive mischief they are doing ? Some time ago they might have pleaded ignorance ; but this is a plea they cannot now make.

There are two sos. which I must except from these censures. The members of the *Friendly So.*, convinced of the insufficiency of their plan, have done themselves great honour by resolving to break up and returning undiminished the money they had taken. The *Consolidated So.* also requires now the full value at 4 p.c. of the annu. it promises, according to the *Lond. Table* of obs. When the contributions are advanced a little higher, or to the values of Dr. Halley's Table at $3\frac{1}{2}$ p.c. int. ; and when besides the first members have consented to make good the deficiencies in their contributions ; this So. will, in my opinion, have attained to rectitude and safety. It is proper I should add, in order to prevent mistakes, that the So. for granting annu. "increasing by survivorship," goes on a plan different from any I have considered, and the nature of which implies safety.

In reference to a modified scheme of dealing with some of these multifarious asso.—modified from the stern measure of justice he had in this and the preceding ed. proposed—he says :

Some think that these sos. may provide a proper security for younger members, and for all that shall become annuitants in more remote periods, by preserving untouched all the stock they shall be possessed of at the end of ten years from the time when the payment of annuities shall begin. But this is a great mistake. An inadequate plan must necessarily benefit *some* by robbing *others*. For some years after the commencement of the annu. the ann. income of the so. must exceed its disbursements ; and all that time the first annuitants will receive, at the expense of all that are to come after them : nor is there a method possible of preventing this injustice. The effect in particular of such a regulation as that now mentioned will only be that a *little* will be secured to annuitants in later periods, whereas otherwise they might have had *nothing*. I should be too tedious were I to enter minutely into the explanation of this. The general reason of it is, that by paying too much to the *first* annu., that accumulation of stock which the calculations suppose (from surplus monies while the annuitants are increasing) would be prevented, and the actual stock, in consequence of this, be rendered so much smaller than it should have been, as to leave but a small provision for the last annu.

In short, in such a so. the payments to annuitants would become equal to its income long before their number rose to a *maximum* ; and therefore, if the so. maintained its resolution not to enter into its stock, the annu. would from that period decrease continually, 'till at last they sunk as much *lower* than they ought to have been, as they were at first *higher*.

To this ed. there were appended various new tables of mort., but as none of these were accompanied by tables of money values, we need not dwell upon them.

Dr. Price was not an advocate for the employment of Life Annu. in State Finances. In his *Essay on Public and the National Debt*, included in this vol., he assigns a reason for his objection, which, however, does not exhibit his usual force and clearness :

When any sum is said to be the *value* of a life annu., the meaning is, that, in consequence of being improved at int. and allowing for the chances of mort., it will bear the whole expense of the annu. If, therefore, instead of being *laid* up for improvement, it is either immediately applied to particular uses, or has been long since spent, there will be a loss equal to the sum which would have been added to the purchase-money had it been improved. This is the reason of the loss which I have shown the public would suffer by offering life annu. in lieu of *stock*, in order to extinguish its debts. And for the same reason it must always lose considerably by *raising* money on life annu.

In 1772 there was also pub. in pamp. form, *A Proposal for Estab. Life Annu. in Parishes for the Benefit of the Industrious Poor*. This was from the pen of the Baron Maseres. In the following year a Bill was intro. to Parl. with a view to the development of the project ; and the Baron then pub. : *Considerations on the Bill now pending*, etc., for enabling parishes to grant life annu., etc. The same being in fact an appendix to the preceding pamp. We shall review the subject more at length under POOR, INS. FOR THE.

In 1772 life annu. were employed as a means of mitigating a very extended financial disaster. The Dukes of Buccleuch and Queensbury, the Earl of Dumfries, Mr. Douglas (the representative of the ancient Earls of Douglas), and many other gentlemen, chiefly of the West of Scotland, had in 1769 entered into a partnership and subs. a cap. of about £160,000 for carrying on the bus. of banking in Ayr, under the firm of Douglas Heron and Co., with the intention of supporting and encouraging manufactures and agriculture : and the Co. accordingly accommodated manufacturers, land-holders and farmers, with money, with a liberality beyond the cautious prudence of other banks ; in consequence of

which, combined with the unsettled state of credit, these noble-spirited gentlemen found themselves seriously involved : for not only was the whole cap. of the bank lost, but their private fortunes were involved. They met the loss by raising about £450,000 on sale of annu. for one or two lives, with a condition for redeeming them by paying a half-year's annu. over the purchase-money, and the annu. due at the time of redemption. In 1774 the annu. were redeemed by means of bonds of £50, secured upon unentailed estates in Scotland ; and to be redeemed by four instalments, the last of which was faithfully discharged in 1782.

In 1773 the 3rd ed. of Dr. Price's *Observations*, etc., appeared. Having devoted so much space to the previous eds., we do not propose to dwell upon this. Indeed, there is little really new in it regarding the annu. sos. The author says :

Several of the annu. sos. in Lond. have been dissolved, and there is reason to hope that those which still remain will not be able much longer to support themselves on their present plans, in opposition to the evidence of demonstration, and the calls of justice and humanity.

In 1773 the first of the three Irish Tontines, whose annuitants afterwards became the subject of investigation by Mr. Finlaison in 1829, was set on foot, under the authority of 13 & 14 Geo. III. c. 5 (Irish statutes). The annu. were at 6 p.c. int. and assignable. In the same year a measure was introduced to, and passed through the House of Commons, under the patronage of Mr. Burke and other prominent men, for the purpose of enabling the industrial classes to invest their savings in the purchase of deferred annu. on their lives ; but the measure was rejected by the Lords.

In 1774 Mr. Thomas Ashmore pub. in Lond., *An Analysis of the several Bank-Annu. from the First Year of their Creation to this Time* ; with references to the different Acts of Parl. passed relative thereto.

In 1775 the second Irish Tontine was set on foot under the authority of 15 & 16 Geo. III., c. 2 (Irish stat.). The annu. carried 6 p.c. with unlimited survivorship. The nominees in this Tontine also were included in Mr. Finlaison's obs. in 1829.

During the greater part of this year a violent feud was raging between Mr. Dale and the managers of the *Laudable So. of Annuitants*. Mr. Dale had, as we have seen (1772), pointed out the impossibility of the asso. continuing to pay the annu. it had promised to its members ; and had offered his services to such of the members as desired investigation. This offer was accepted. Mr. Dale made further investigations. His results were challenged by the management, and his motives violently assailed. Dr. Price and Mr. Benjamin Webb supported Dale's calculations. We cannot follow the controversy here ; but shall speak of it again in our hist. of *Laudable So. of Annuitants*.

In 1775 Mr. Charles Brand pub. *A Treatise on Assu. and Annu. on Lives, with several Objections against Dr. Price's Obs. on the Amicable So. and others*. To which was added a short, easy, and more concise method of calculating the value of annu. and assu. on lives than any theretofore pub. There is nothing in this work calling for any special attention here.

In 1776 there appeared in *Phil. Trans.* from the pen of Dr. Price, *Short and easy Theorems for finding in all Cases the Differences between the Values of Annu. payable yearly, and the Sum payable half-yearly, quarterly, or monthly*. In the same year there was pub. anon., *Reflections on Gaming, Annu., and Usurious Contracts* ; and a miscellaneous treatise by Mr. W. Emerson, on several mathematical subjects : among them annu.

We now, 1777, arrive at another phase in the hist. of Life Annu. That dealings in these had long been made a cover for the practice of *usury*, we have already more than hinted, and that fact was well known at this period. Proceedings in the courts of law revealed some of the worst cases, and the imagination duplicated these ; although the facts were sufficient to draw attention to the subject unaided by the imagination. A scheme by way of remedy was propounded, it was stated upon the model of similar measures in operation in France and Italy, viz., *the fixing a scale or table according to the age of the grantor at the time of the grant, with reference to which the amount of the annu. was to be limited*. The subject was taken up in the House of Commons. It was referred to a committee, "*appointed to take into consideration the laws then in being against usury, and the present practice of purchasing annu. on the life of the grantor*." This committee examined many leading solicitors, and also the principal officers of the *Amicable* and *Equitable*, and ultimately prepared and presented to the House the following resolutions :

(1). That it is the opinion of this Committee that the purchase of annu. for the life of the grantor, being generally intended as a loan of money, ought to be regulated accordingly. (2). That 4 p.c. is a sufficient compensation for the risk of a life above 21 years and under 25 years. (3). That 4 one-half p.c. is a sufficient compensation for the risk of a life above 25 years and under 30 years. (4). That 5 p.c. is a sufficient compensation for the risk of a life above 30 years and under 35 years. (5). That 5 one-half p.c. is a sufficient compensation for the risk of a life above 35 years and under 40 years. (6). That 6 p.c. is a sufficient compensation for the risk of a life above 40 years and under 45 years. (7). That 6 one-half p.c. is a sufficient compensation for the risk of a life above 45 years and under 50 years. (8). That to take any larger ann. sum than the legal int. of each £100 advanced in the purchase of an annu. for the life of the grantor, *together with the sums above specified, being the value of the respective risks attending such annu., ought to be made usury*. (9). That all annu. for the life of the grantor ought to be redeemable on the payment of the sum advanced, with the arrears of the annu. to the time of payment.

Upon these resolutions a Bill was introduced to the House, framed in conformity

therewith. There was much diversity of opinion concerning the measure. Its advocates held it forth as a sure preventative of many former abuses; others regarded it as altogether a futile attempt to regulate private dealings beyond the scope of enlightened legislation.

In the end there was passed, this same year, the 17 Geo. III., c. 26.—*An Act for registering the Grants of L. Annu: and for the better protection of Infants against such Grants.* The preamble sets forth, "Whereas the pernicious practice of raising money by the sale of Life Annu. hath of late years greatly increased, and is much promoted by the secrecy with which such transactions are conducted, be it therefore enacted," etc. And it was enacted: that a memorial of all deeds, bonds, etc., for granting Life Annu. should, within twenty-one days of the execution thereof, be enrolled in the Court of Chancery; which memorial should contain the date, names of the parties, witnesses, etc.; otherwise every such deed, bond, etc., should be void. All future deeds for granting annu. were to contain the consideration, "which shall be in money only," and the names of the parties in words at length. All contracts for the purchase of annu. with any person under 21 years of age were to be void. Any person who should procure, or solicit, any minor to grant an annu., etc., should be punished by fine or imprisonment, etc. Solicitors, scriveners, etc., who should take more than 10s. per £100 for procuring money for annu. should be punished by fine and imprisonment. There were a few exceptions, such as annuity or rent-charge under will or marriage settlement, to which the Act did not apply; nor did it apply to annu. granted by any corporate body, or any authority or trust created by Act of Parliament.

Even this Act—very different from the orig. measure—was not passed without some considerable opposition. We find in the *Morning Chronicle and Lond. Advertiser*, 6 May, 1777, a very strong article against it, from which we will only extract the following:

The result will be that a multitude of gentlemen in every part of the three kingdoms (for almost all their loans have been made in London) will find, to their inexpressible astonishment and indignation, their most private concerns and important secrets become the talk of the whole neighbourhood. The consequences to the peace of families must be dreadful beyond description; and it will render the members of parl., and especially the knights of shires, who perhaps have never attended to this matter, and therefore neglected to oppose this tyrannical, unconstitutional, *ex post-facto* clause, so extremely unpopular and odious in their several counties as to ruin their interests with the most useful and respectable of their constituents, or subject them to an immense deal of extra trouble and expense to get re-elected; for when such a clause has once passed, all the mischief *will be done*, and no reparation can be made to the sufferers, as in other cases, by repeal.

In the *Morning Post and Daily Advertiser*, 5 May, 1777, we find the following:

Annuity Act.—Any man of known honour and consideration desirous of raising a temporary sum of money by the grant of an annuity for his life, redeemable at his pleasure, may be supplied to a capital amount by a person of very respectable situation and character. If immediate application is made the registering of the transaction in the Court of Chancery, as directed by the intended Annuity Act, will be avoided. At the same time, such gentlemen as think proper to apply may be assured that the business (though previous to the Act being in force) will be negotiated without the least exaction on the grantor. It is requested that applications may be made by letter to A. A., to be left at Mr. Jenkinson's, Charles Street, Soho Square, which will be instantly attended to.

In the *Morning Chronicle and Lond. Advertiser* of the 8th of the same month the advertisement is repeated.

It has been said of this Act, that during its existence it gave rise to more litigation than perhaps any other statute since *Magna Charta*; and according to Sugden, the Courts, in their dislike to it, frequently carried their decisions not only beyond the letter, but occasionally beyond the spirit of the law. It has been further remarked of it, that, although the very doubts and difficulties it created might have a tendency in some degree to limit loans by way of annu., they yet, as a necessary consequence, rendered such transactions more onerous on those who ventured to engage in them. The lender was sensible of the risk and danger he ran of having his deeds set aside on some technical ground, foreign to the merits of the contract, such as an imperfect *memorial*—a document which it appears few lawyers could prepare with the certainty of its standing the scrutiny of the Courts, and he, the lender, therefore seldom failed to exact such an increased percentage as an *insurance* against the hazard he ran of losing the securities for his money. Thus the borrower, or grantor, paid not only the high rate of int. for the use of the sum lent, which the state of the times required, but a heavy surcharge upon the market rate, as the other compensation for the danger incurred by lending it.—*Kelly*. The Act, which did not extend to Scotland or Ireland, was repealed in 1813, by 53 Geo. III., c. 141, and re-enacted in another and more specific form.

Macpherson, in his *Hist. of Commerce*, says, "This remedial Act, framed with the wisest and most benevolent intentions, has been perverted by mistakes and violent misconstructions so as to be made to hold out encouragement and protection to many infamous frauds."

Shortly after the resolutions of the parl. committee had been made public, there appeared in the pages of the *Gentleman's Mag.*, a paper—*The Value of Annu. to Prevent Usury Accurately Stated*, signed "W. D. author of Calculations of the Value of Annu." The writer was William Dale, already spoken of. He says the plan of the committee was much approved of "on account of the plain method of distinguishing between money

paid for rate of int., and that paid for risk of life." He then furnishes some tables to show that the committee allowance for risk of life was not only compensation fully sufficient, but at some ages much more than sufficient, "even by Lond. Mort., which is greater than by most, or perhaps by any other bills." He adds, this may expose the exorbitance of usury in general; and indeed his principal motive was to inform borrowers of the great interest which they unthinkingly pay by such mode, "hoping they may have discretion to profit by the explanation." He contended that the utmost compensation for the risk of life ought not to exceed what the *Equitable* So. required, "because no calculation from any table of mortality allows so much." He thus concludes his letter :

Nevertheless, to obviate any cavilling, let the committee's full allowance be admitted. Then a person advancing £100 on the life of age 21, ought to receive £4 annually for *risk*, and which being paid, he could not *lawfully* receive more than 5 p.c. for int., which would be 9 p.c. in the whole for the loan : and which would be at the rate of 11 years 40 days' purchase ; or, which is the same, £11 2s. 2½d. should be paid for each £1 annuity.

But if age 21 should grant an annuity for *six years'* purchase, it would be paying at the rate of £16 13s. 4d. int. p.c. p.a. ; out of which, deducting the full compensation of 4 p.c. for *risk* of life, the remainder would be £12 13s. 4d. for int. simply.

As to *pretence* of lives on which annuities are obtained being more than commonly hazardous, on account of a freer manner of living, or on whatever other account, will those engaged in such traffic deny that they are particularly cautious of adventuring to advance money on any life *which they cannot get insured*, unless it appear to them so good that they chuse to abide the chance of it themselves ? The *Equitable* So. insures this age of 21 for £3 9s. 4d. p.c. p.a., in which case, therefore, the purchaser might enjoy £13 4s. p.c. clear annuity for int. only, *without risk*, having secured the whole capital to be repaid on the demise of the grantor.

Usurers understand these advantages so perfectly that there can be no need of information to them ; but if these explanations could induce the thoughtless prodigal to reflect on the unconscionable price (attended with other expenses) paid for present enjoyment, it might restrain immoderate pursuits, and render future moments more comfortable.

The learned Blackstone, who wrote his famous *Commentaries* shortly before this period, offered the following observations on the subject now before us :

The practice of purchasing *annuities* for lives at a certain price or prem., instead of advancing the same sum on an ordinary loan, arises usually from the inability of the borrower to give the lender a permanent security for the return of the money borrowed at any one period of time. He therefore stipulates (in effect) to repay annually, during his life, some part of the money borrowed, together with int. for so much of the principal as annually remains unpaid ; and an additional compensation for the extraordinary hazard run of losing that principal entirely by the contingency of the borrower's death ; all which considerations being calculated and blended together will constitute the just proportion, or *quantum*, of the annu. which ought to be granted. But as the right to recover the principal is put in jeopardy, a transaction of this kind (however high might be the amount of the annu. exacted by the lender, in proportion to the sum advanced) was never considered, at least in our own times, as an usurious bargain. Nor has it ever been deemed of that character, though the life of the borrower be ins. (as is an *usual practice*) at some ins. office for the benefit of the lender, and the amount of the annuity be so adjusted as to cover the expense of such ins. ; nor though the borrower himself agree to insure his own life, at his own expense, for the benefit of the lender ; though by such arrangements the latter is indirectly protected (supposing the office to be solvent and the insurance kept on foot) from all danger of losing the sum advanced.

As a means of defeating the Usury Laws, the device was a success.

In this very year, 1777, an important annuity case arose, of which Francis (*Annals*, etc.) furnishes the following graphic account :

During the minority of Sir John St. Aubyn, and at the early age of 17, this gentleman found himself, like many more, in want of money. The scrivener of the City were ready, the extravagancies of the youth supplied, an unlimited amount of cash was placed in his possession, and in return he granted to the underwriters annu. guaranteed on the estates to which he would succeed at 21, assu. his life with them in the mean time to guard against contingencies. Not content with this, the underwriters made him procure the additional guarantee of a schoolfellow, for which the young scapegrace pledged his honour to his friend. When he came of age, he fortunately arrived also at years of discretion, and instituted a suit in Chancery for the destruction of the bonds which he had granted. Great was the wrath of the money-changers, but their anger was vain, and they were obliged to content themselves with the righteous decision, that on repayment of the principal, with 4 p.c. int., the annuity bonds should be given up. Nor was this a solitary instance in which the assu. and annu.-mongers were overreached.

It will be incumbent on us, when we reach the subject of USURY, to show how and when the several forms of evasion from time to time practised arose. This we believe we shall be able to accomplish. Confining ourselves here to Annuities on Lives only, we need but state that when it once came to be admitted that there was no usury *when the principal advanced was put at risk*, the device of the borrower selling an annuity for the duration of his life to the lender appeared complete. And even when the jurists, not readily outwitted, made good the position that both principal and interest must be in danger of being lost, to lift the transaction entirely out of the category of usury, it will be seen that the dealings in Life Annuities even met this emergency. But the money-lenders had barely built upon this bulwark of protection to their operations, than they commenced to sap it to its very foundations. They did not want the practice to realize the theory. They did not want either their principal or their interest to be in jeopardy ; and they know the remedy. It was by means of Life Ins. If they insured the life of a borrower, then his death, which indeed caused the stoppage of the annuity, brought them back their principal. It was a long time before the Courts became reconciled to this paradoxical evasion ; but they ultimately did so. Another danger also threatened.

The borrowers grew tired of placing themselves entirely at the mercy of the lenders, and they devised the system of *redeemable annuities*. Again the Courts rebelled, but ultimately succumbed. We shall treat of these points more at large as we proceed.

In 1777 also Mr. Wm. Dale pub., *A Supplement to Calculations of the Values of Annu. pub. for the Use of Sos. instituted for Benefit of Age. Containing various illustrations of the Doctrine of Annuities, and Compleat Tables of the value of £1 immediate Annu. (being the only ones extant by half-yearly Int. and payments). Together with investigations of the state of the LAUDABLE So. of Annuitants, showing what annu. each member hath purchased, and the Mort. therein from its institution, compared with Dr. Halley's table; also several Publications, Letters, and Anecdotes relative to the So., and explanatory of proceedings to the present year, etc.* The writer in his opening para. shows pretty well what had been the consequence of the raid made by Dr. Price and himself upon the annu. asso. of which we have already spoken :

Of all the deluding inst. for benefit of age, the writer knows of but three at present remaining. Of these only one (he believes) has attempted reformation, and that attempt has been frustrated merely because the intelligent and humane were in the minority. To prove this allegation true, the author of *Calculations*, etc., thinks it incumbent on himself to submit to inspection of an impartial and candid public, such calculations as he presumes may fully demonstrate it to the entire satisfaction of all who read with willingness to understand. For which purpose compleat Tables of £1 annu. by half-yearly int. and payments; Tables of what annu. each member in the *Laudable So. of Annu.* has purchased; and the actual state of mort. in that So. from its institution, are here subjoined. And these the writer deems himself called upon by both the contending parties to produce.

He then recounts many points of the controversy to which we have already specifically referred.

Contrasting the smaller Mort. which had been experienced in the *Laudable So. of Annuitants* against that which had been experienced by the *Laudable So. for the Benefit of Widows*, he offers a practical suggestion, which is now generally supposed to be the result of modern sagacity :

It may be that tables of mort. which include a mixture of healthy and ailing, would not agree with either of these sos. *separately*; for it might be expected beforehand that *fewer* would die in the first, and more in the last, than what the tables suppose. Such consideration would direct the application of tables which suppose the *fewest* deaths to the *So. of Annuitants*; and the contrary to the other So., as the *most prob.* means of approaching nearly to the real state of mort. in each So. Accordingly, comparison finds that *real longevity* in the *Laudable So. of Annuitants* exceeds that supposed even by *BRESLAW BILLS*; and perhaps comparison would find that *real mort.* in the other, and such like sos., would exceed that supposed by even *Lond. Bills*: were it not for the particular consideration which counter checks, by taking all possible precaution to admit no life suspected of unhealthiness, either in state of body or profession.

He then addresses the following remarks to the orig. founders and then managers of the *Laudable So.*

Do they not know that the inst. according to *their* plan is the direct reverse of "laudable"? Will they themselves presume to term it laudable to have seduced unwary believers to *hope* for £44 annu. by constant promise and formal agreement? Will they term it laudable to mock the deceived and disappointed, by telling them that "the Sec. always informed every member at entrance what the cap. was, and the number of members—it was for them to calculate? Will they term it laudable or humane to tell deluded age that the promised annu. cannot be paid; and even so much as has been purchased and might be received, shall not be paid them; for that they the first members having bought the least, and being the majority, have desire and intention, nay, have already resolved to be sharers in the stock *equally* with those who have purchased the very most, and depended on agreement, and on their promise, to receive it with addition; that is not less than £44 during life?

In this vol. was contained (p. 49) a table showing the value of life annu. by half-yearly payments, int. $3\frac{1}{2}$ p.c. according to Simpson's and Halley's Tables; the first time, we believe, that half-yearly values had been calculated.

In 1778 the Government raised a further sum of money by the sale of life annu. In this year also the third Irish Tontine was set on foot; and the nominees, in each case, were included in Mr. Finlaison's Observations in 1829.

In 1778 also was pub., Articles of the *Universal Inst. for Annu. and Assu. on Lives*. In three parts. [HIST. OF LIFE INS.] And in the same year, by W. Backhouse, *A Dissertation on the Value of Life Annu. deduced from general principles clearly demonstrated, and particularly applied to the Schemes of the Laudable and Amicable Sos. of Annu. for the benefit of age.* Also, same year, at Vevey, by M. Fatio, an extensive collection of tables, embracing some on annuities.

In 1779, by 19 Geo. III. c. 18, the sum of £7,000,000 was authorized to be raised on Annu.; and £490,000 by a Lottery. Every £100 sunk for an annu. was to produce a £3 p.c. annu. redeemable by Parl.; and also an annu. of £3 15s. p.c. for 29 years, and then to cease. But every subs. might exchange the last-named annu. for a life annu. on intimating a desire to do so before a certain day named in the Act, and naming a nominee: there being no restriction as to age of subs. or nominee. Persons who subs. a £1000 to the annu. fund were entitled to 7 tickets in the Lottery upon paying a further sum of £10 each for the same.

The Government of that period was driven to great extremities for raising money; and nearly every session one or two Annuity Acts were passed, generally accompanied by a

Lottery project. But most of the annu. granted were for terms of years or in perpetuity, and therefore do not require detailed notice here.

In 1779 Mr. Wm. Morgan, Actuary of the *Equitable*, pub. his *Doctrine of Annu. and Assu. on Lives and Survivorships Stated and Explained*. The particular degree of merit to be ascribed to this work has been the subject of some controversy. It appears to have been pub. very much at the instance of Dr. Price, who wrote the introduction, wherein he says :

The second chap. contains an explanation of the doctrine of life annu. in general, and of the principles on which their values are calculated. At the end of this chap. an account is given of the method of expediting all calculations of the values of life annu., which must, I think, be very acceptable to all who have ever employed themselves in making such calculations. In these two chap. Mr. Morgan has studied to render the subjects of which he treats as intelligible as possible to persons who may be unacquainted with mathematics.

Regarding the mort. table to be employed in the valuation of annuities, Mr. Morgan says :

The excellent Mr. Simpson has indeed given a table of the values of two joint lives agreeable to the London table of obs., but this table of obs. ought not to be much used, because representing the rate of mort. among the inhabitants of Lond. taken in the gross, it gives the values of lives much too low for the middling and the better sort of people in Lond. itself. . . .

Again :

As by these methods the calculations are rendered pleasant as well as expeditious, I hope that ere long some person will undertake them, chusing for his guide the *Northampton* table of obs., which is perhaps better fitted for common use than any other.

There can be no doubt but that the work contained formulæ for the solving of questions in annuities, and in life contingencies generally, which were new and valuable ; and as Dr. Price does not specifically claim these, Mr. Morgan is entitled to be regarded as the originator.

In 1779 M. de Saint-Cyran pub. his work, wherein the valuation of annu. on lives is treated algebraically, but in a manner much inferior in all respects to that of Mr. Simpson ; and six tables are given of the values of annu.—on single lives, on the survivor of two lives, and on the last survivor of three, calculated from M. Kerseboom's table. Although the values in the cases of two and of three lives were only determined by approximation, these tables were just then a valuable acquisition to the science ; but their use was entirely superseded only four years after by the pub. of others much more valuable.—*Milne*,

The accompanying column shows his annu. values on single lives at 5 p.c.

In 1780 Mr. Brand published an ed. of Smart's Tables, and therein was contained many problems in life annu., and also various tables of annu. values ; all of which have been noticed here in their chronological order.

In 1781 M. Antoine de Parcieux pub. in Paris, *Traité des Annu., ou des Rentes à Terme*, [DE PARCIEUX.] In the same year M. Flouren-court pub. a work on Political Economy, wherein was contained a T. of annu. for single lives, deduced from De Parcieux's T. of Mort.,

but making the annu. payable at the end of every year the life survived ; with a table of proportionate parts for add. to be made according to the period the annu. survived the year.

In 1783 Dr. Price pub. 4th ed. of his *Observations*, etc. This ed. was very much more comprehensive than the eds. which had preceded it ; but it mainly demands notice from us here from the fact that it contained tables of money values deduced from the NORTHAMPTON T. of Mort. The author says hereon :

The 6th table, showing the mean prob. of the duration of life according to a register of mort. at Northampton, has been inserted in all the former eds. ; but it is now given more correctly ; and tables deduced from it have been added, of the expectation of life, and the values of single lives, and of any two joint lives at all ages, and for three rates of int. The labour of computing these tables was undertaken in order to set aside all occasion for using the defective valuation of lives founded on Mr. De Moivre's hypothesis ; but not having been able to finish these computations till a great part of this treatise had been printed off, I have been obliged to continue the use of the old tables so far as to take from them many of the examples of the solutions of questions in the first and following chapters.

The other distinguishing feature of this ed. was, that it contained the SWEDISH Mort. T., with expectations and money values deduced therefrom. The learned author says hereon :

With respect to the tables in particular deduced from the Swedish obs., I cannot hesitate to pronounce that they exceed in correctness everything of this kind which has been hitherto offered to the public ; and that nothing is wanting to make our knowledge in this instance compleat, but similar obs. in other kingdoms. By these tables I have been enabled to state minutely the different rates of mort. at all ages among males and females ; and to form tables of the values of single and joint lives for each sex, as well as for both sexes collectively ; in consequence of which I have been further enabled to determine the increase of the values of annu. payable during survivorship, occasioned by the longer duration of life among females ; and thus to furnish a direction of some importance to the various sos. in this kingdom and abroad, for providing annu. for widows.

Table of Annu.
Values—5 p.c.

Age.	Years' Purchase.
10	15.40
15	14.82
20	14.15
25	13.59
30	12.96
35	12.32
40	11.72
45	11.05
50	10.15
55	8.93
60	7.73
65	6.73
70	5.74
75	4.59

Here are abstracts of life annu. values deduced from the two preceding tables :

NORTHAMPTON TABLE.						SWEDISH TABLES. 4 p.c.					
Age.	4 p.c.	5 p.c.	6 p.c.	Males.	Females.	Combined.	Age.	4 p.c.	5 p.c.	6 p.c.	Males.
10 ...	17.523	15.139	13.285	18.674	19.109	18.891	10 ...	17.523	15.139	13.285	18.674
15 ...	16.791	14.588	12.857	18.105	18.568	18.336	15 ...	16.791	14.588	12.857	18.105
20 ...	16.033	14.007	12.398	17.335	17.872	17.603	20 ...	16.033	14.007	12.398	17.335
25 ...	15.438	13.567	12.063	16.592	17.087	16.839	25 ...	15.438	13.567	12.063	16.592
30 ...	14.781	13.072	11.682	15.751	16.261	16.006	30 ...	14.781	13.072	11.682	15.751
35 ...	14.039	12.502	11.236	14.812	15.465	15.138	35 ...	14.039	12.502	11.236	14.812
40 ...	13.197	11.837	10.705	13.668	14.401	14.034	40 ...	13.197	11.837	10.705	13.668
45 ...	12.283	11.105	10.110	12.535	13.383	12.959	45 ...	12.283	11.105	10.110	12.535
50 ...	11.264	10.269	9.417	11.267	12.049	11.658	50 ...	11.264	10.269	9.417	11.267
55 ...	10.201	9.382	8.670	9.998	10.642	10.320	55 ...	10.201	9.382	8.670	9.998
60 ...	9.039	8.392	7.820	8.540	9.039	8.789	60 ...	9.039	8.392	7.820	8.540
65 ...	7.761	7.276	6.841	7.090	7.566	7.320	65 ...	7.761	7.276	6.841	7.090
70 ...	6.361	6.023	5.716	5.670	5.897	5.783	70 ...	6.361	6.023	5.716	5.670
75 ...	4.962	4.744	4.542	4.487	4.582	4.534	75 ...	4.962	4.744	4.542	4.487

In 1783 the Baron Maseres pub. *The Principles of the Doctrine of Life Annu. explained in a familiar manner, so as to be intelligible to persons not acquainted with the Doctrine of Chances ; and accompanied with a variety of new tables of the values of such annu. at different rates of int., but for single lives, and for two joint lives ; accurately computed from obs.* In this work was contained a very lucid criticism upon the works of various writers already named by us in the course of the present art. The author was an amateur, and an enthusiast, and is entitled to the gratitude of succeeding generations. His work is very bulky, consisting indeed of more than 700 pages ; but the preface contains a very good synopsis of the contents ; and from that we take the following :

The principles of the whole doctrine are contained in the first 90 pages, which I would therefore recommend to the attentive perusal of every reader. Of these, the two first pages contain an explanation of the *data*, or grounds upon which the computations of the values of annu. for lives are built. These are, first, the decrease of the present value of a future sum of money arising from the mere distance of time at which it is to be paid, and the consequent discount that is to be allowed to the purchaser of it for prompt payment (the quantity of which discount it is evident will depend on the rate of int. of money), and secondly the chance which, when the payment of such future sum is not made certain, but is to depend upon the continuance of the life of a person of a given age, the grantor has of escaping the necessity of paying it at all by means of the death of the said person before it becomes due ; in order to determine which chance it is necessary to have recourse to certain tables of the several prob. of the duration of human life at every different year of age, which have been formed from obs. of the numbers of persons who have died every year, in the course of a long series of years, at different ages, in divers cities and parishes, and other numerous bodies of men.

In pages 3-6, an account is given of two tables of these prob. that appear to me to be better grounded, and consequently fitter to be adopted, than any others : to wit, those of Mons. Kersseboom and Mons. de Parcieux ; and the tables themselves are exhibited. And in p. 7-15, a comparison is made between these two tables, in order to discover which of them represents human life at several different ages, as the more durable, or makes the prob. of living greater than the other ; and it is found upon the said comparison that till the age of 70 years, the prob. of living are rather greater according to Mons. de Parcieux's table than according to Mons. Kersseboom's ; but that after the age of 70 years, or for persons above the age of 70 years, the prob. of living are greater according to M. Kersseboom's table than according to Mons. de Parcieux's.

We shall have occasion to speak of this work again under various heads. That it was calculated to help forward the science of life annu. to a considerable extent is admitted by all who speak of the work.

Professor Tetens, of Kiel, in his work on life annu. and rev., pub. 1785, says : "These annu. calculations have long been known in England. Halley, whom we have to thank for so many useful discoveries, came upon them already at the end of the preceding century. Huygens, before him, had taught how to compute prob. His principles Halley applied to the registers of death, when they were brought into order ; and formed the method upon which to compute life and widows' annu." Again : "Of the more recent British authors on this matter, only Morgan and Price have come to my knowledge as having produced anything excellent or orig. In the general theory both agree with Simpson. Morgan has indicated a double method of computing annu., which has in all respects much value. Dr. Price, who with justice much recommends it, seems, however, to ascribe to it somewhat too great pre-eminence. *I have not found it so easy or short as not to have had reasons for devising yet another, and for preferring this latter method.* One can compare them and judge."

It is the columnar method, similar to that afterwards devised by Barrett, of which he speaks.

In 1785 also the 2nd vol. of the *Opuscula Analytica* was pub., after the death of its author, Euler ; and therein the solution of a question relating to rev. annu. is given. "A much more arduous undertaking (observes Mr. W. T. Thomson) than in the present day, when so many auxilliary tables are ready to assist the actuary."

Sir John Sinclair, in his HIST. OF THE REVENUE, first pub. in 1785, enumerating the means which had been employed in raising the revenue, said :

Annuities for lives is another mode that has been frequently practised, and by some is accounted the

most advantageous. But it is hardly possible for a nation when it is in distress by any means to make a profitable bargain with a money-lender, particularly on the principle of granting temporary annu. Thus, when annu. for lives are granted, the creditor takes care to pitch upon the persons who are the most likely to live long, and who consequently will prove, for the longest period, a burden upon the State. Nor have all the flattering hopes which *Tontines* held forth to the avarice of mankind been able to procure money by life annu. on advantageous terms to the public.

In 1789 the Great English Tontine was set on foot under the authority of 29 Geo. III. c. 41. It was to raise the sum of £1,002,500 for the public service by way of Tontine. Every subs. for the sum of £100 5s. was to be entitled to an annu. upon the life of his nominee at a rate proportioned to the age of the person of from £4 3s. to £5 12s., with benefit of increase arising from survivorship, till the annu. upon the orig. share should amount to £1000 a year, the excess then falling in to the public. The gentlemen who contracted with Government for the whole of the Tontine not being able to get it disposed of in time, an option was afterwards given, by 30 Geo. III. c. 45 (1790), to the subs. to convert it into terminable (long) annuities for 69½ years. A considerable number of the orig. contributors held their subs.—to the number of 4129 out of 10,000 shares. These were held upon 3495 lives. The mort. of this particular class was given in Mr. Finlaison's Obs. in 1829. [GOVERNMENT ANNUITY TABLES.]

In 1789 the *Westminster* So. for Granting and Purchasing Annu. and Ins. upon Lives and Survivorships applied to Parl. for a charter, and was refused. Three years later (1792) the asso. was founded under a Deed of Sett.

In 1792 Mr. Wm. Blewett pub. *Perpetual and Determinable Annu. reduced to a level*; or a comparative view of long and short annu., with 3 p.c. reduced, and 3 p.c. Consols at the Bank of England, etc. But neither in this, nor in his work in 1783, did he treat of life annu.

Dr. Waring, in a small pamph. *On the Principles of translating Algebraic Quantities into probable relations*, etc., pub. 1792, devoted about 30 pages to the consideration of the subject of annu. and assu. "His style and manner (says Francis Baily) will not be much admired by those who have read the works of preceding writers on this subject."

In 1793 the *Royal Exchange* Marine and Fire Corps. applied to Parl. for add. corporate powers to enable them to grant, purchase, and sell annuities for lives and on survivorship; and by the 33 Geo. III. c. 14, they were empowered so to deal in annuities under the name of the *Royal Ex. Assu. Annuity Co.* The preamble of this Act deserves particular attention:

Whereas it would tend to public utility, if the said Corps. were empowered to grant, sell, or purchase annu. upon lives, or by or with survivorship, *which no other Corps. now are; the granting and purchasing such annu. being in the hands of improper persons, who make an exorbitant gain thereby, to the great detriment of individuals and the public in general*, which would be in a great measure (if not wholly) prevented if a known office, long estab., were empowered to do so. May it therefore, etc.

It is necessary also to see the precautions with which this power was fenced round. It is provided by the Act that, in order to render full security to the annuitants, the money received for the annuities should (as often as it should amount to £1000) be laid out in Gov. security; the interest or dividends on which the corp. might from time to time receive: but they were prohibited from touching any part of the principal until the extinction of the life on which the annuity was granted. And for the sake of preventing any fraud in this respect it was enacted that the time and place of the death and burial of each annuitant should be inserted twice at least in the *Lond. Gazette*, and that a certificate of such death or burial, with an account of the annuity depending, should be left at the office in London, to be inspected without fee or reward by any person interested in any annuity granted by virtue of that Act. And it was likewise further enacted that no agreement for the selling or purchasing of any annu. should be valid unless at the price stated in a table which was directed to be prepared and hung up in some conspicuous place in the office; and which table should be remaining in the office at the time of granting the annu.

In 1794 Rev. David Wilkie pub. *The Theory of Int., Simple and Compound, derived from first principles, and applied to Annu. of all descriptions; of Tontines, etc., etc.*

In 1796 a new Legacy Duty Act—36 Geo. III. c. 52—came into force. Previous Acts had imposed simply a stamp duty upon legacies of specific amounts, and had not reached annu. on lives. This Act therefore opened a new and large source of revenue; for it had become customary to bequeath annuities in order to escape the duty. Where an annu. was bequeathed for life or for years, it became necessary to value the same in order to assess the duty (sec. 8). A series of annu. tables was therefore appended to the Act, based upon the *Northampton T.* The use of these tables was superseded in 1853 by those appended to the Succession Duty Act of that year. [LEGACY DUTY.] [SUCCESSION DUTY.]

In 1796 Mr. Thomas Tremlet pub. *Strictures on a proposed plan for adopting a Loan, with a view of instituting Rev. Annu., or Government Dividends payable at a future period.* In the same year Mr. Wm. Hunt pub. *A Collection of Cases on the Annuity Act*; with an Epitome of the Practice relative to the Inrolment of Memorials.

In the same year also was pub. *A Treatise upon Law of Usury and Annuities*, by Francis Plowden.

In 1799 Sir Frederick M. Eden and several other persons of position in the City of Lond. having conceived the idea of founding a new Ins. Office with corp. powers, a Bill was introduced to the House of Commons and passed. The preamble of the Act recited, that "it would in many respects be greatly advantageous to the public if a corp. were estab. for making or effecting ins. on lives, and ins. against loss or damage by fire, and for granting, purchasing, or selling annuities for lives or on survivorship."

A draft-charter to incorp. a co. pursuant to the powers of this Act was prepared, and in due course submitted to the law officers of the Crown. The name to be the *Globe Ins Co.*; among its objects the granting of annuities.

In the report of the law officers upon the charter and its proposed powers, it was pointed out that there should be

Some restraint on the terms of the Co.'s dealings in annu., post obits, and other traffick of the same description in which they understood it was the intention of the Co. to adventure, and in which the example of a great co. authorized by Parl. and by Your Majesty's Charter might be highly injurious if their dealings should be for the same unconscientious advantages as were usually extorted by those who deal with necessitous persons in such trans.: which in general can only be carried on with necessitous persons, and most frequently with many persons subsisting on expectancies. In this view, it appeared to them that publicity in such transactions is highly important; and that all post obits to be granted to the Co. ought to be subject to provisions similar to those respecting annu. contained in the Act of Parl. of 17th year of Your Majesty's reign for registering grants of life annu., and for the better protection of infants against such frauds; but they conceived that could not be done without the aid of Parl.

In consequence of this report, some modifications were made in the proposed charter; and another set of law officers (in 1802) reported upon the amended charter—but having before them the objections of their predecessors in office just quoted—as follows:

We conceive that this objection applies principally to post obits and dealings of that description: so far as it so applies, it is wholly removed by an express renunciation on the part of the co. of all dealings of that kind, and a consent to be restrained therefrom by the terms of their Charter, as to the mere dealing in annu. If it had stood alone, as it now will do, we do not apprehend that it would have been objected to on the part of our predecessors; and so standing we do not ourselves feel it to be fairly objectionable.

The promoters of the *Globe*, after encountering a good deal more of this pre-precautionary legislative attention, determined upon the prudent course of commencing bus. under an ordinary deed of asso. and without a charter. [GLOBE INS. CO.]

In 1800 Mr. Robert Withy pub. *A Practical Treatise of the Law of Annu.*, wherein the different securities for annu. and the remedies for the recovery thereof were fully exemplified. Together with the determination of the Courts on the construction of the Annu. Act. To which was added a large collection of precedents.

In 1802 we reach a name that will require more prominent mention as we proceed. It is that of Mr. Francis Baily, author of various works bearing upon L. Annu. and L. Ins. In a work on Leases, pub. in this year, there was an appendix, containing besides analytical demonstrations, *Some remarks on the method by Dr. Price and Mr. Morgan for finding the Value of Annu. Payable Half-yearly, Quarterly, etc.*, together with some formulæ for determining the rate of Int. in Annu. (see again 1805 and 1810.)

In 1803 the *Globe Ins. Co.* was founded. Its founders, as we have seen, contemplated making the grant of life annuities an important feature of its business. Hence one of the reasons for the security of a large capital. Its active projector, Sir F. M. Eden, said (1804):

With respect to annu. on lives and on survivorship, the creation of a new corp. with an adequate capital for this branch of bus., may afford great accommodation to the public. It is more wanted in this country, as the public funds do not in this respect furnish those facilities for the purchase of annu. which were formerly met with in France. The grant of an annu. is often a measure greatly beneficial to the seller, as well as the purchaser. Important family arrangements might in many instances be effected thro' the medium of life annu., if a new office were sanctioned by legislative authority on safe and equitable principles. The land-tax of a very considerable estate of a nobleman of high rank has been redeemed by means of a sum raised by the grant of life annu.

In 1803-4 Sir John Sinclair, Bart., pub. the 3rd ed. of his famous *Hist. of the Revenue*, and therein he offers the following remarks upon the granting of L. annuities as a scheme of national finance:

In time of war, when a State is immersed in difficulties, every idea of obtaining money to advantage upon contingent annu. is absurd: but during peace the same rule does not hold good. Were the public therefore to estab. regulations similar to those by which private sos. are enriched, considering that it may act on a much greater scale, the granting of such annu. might prove a very important resource, more particularly in a luxurious age like the present, when every individual aspires to rival his neighbour in expense, and would grasp at so desirable and certain a mode of increasing his income. *But care should be taken to grant annu. only on the life of the person by whom the money is paid; nor should the creditor be suffered to search everywhere for the best lives, or for people who from the strength of their constitutions, or other circumstances in their favour, are likely to live beyond the usual short space of human existence.*

In 1804 Mr. Newman pub. *A Collection of Mercantile Tables upon a New and Improved Method*; and among them were Annuity and Compound Int. Tables, "compiled from the best authorities."

In 1805 Mr. Francis Bailey pub. his work on the *Doctrine of Int. and Annu. analytically*

investigated and explained; together with several useful Tables connected with the subject. We shall give an outline of his views upon L. annu. under date 1810.

The *Provident Life* was founded in 1806, and commenced at once to grant L. annu. At that date only one other ins. office had pub. its rates for life annu., and that was the *Royal Exchange*. The following table gives the "year's purchase" required by each of these offices for life annu. of £1. The *Royal Exchange* paid its annu. quarterly, the *Provident* half-yearly.

In 1806 also Mr. John Clark pub.: *An Enquiry into the Nature and Value of Leasehold Property, Reversionary Int. in Estates, and Life Annu., with a variety of Tables*, etc.

In the same year M. Duvillard pub. *T. of Mort. for France, before the Revolution*, based upon obs. extending over a considerable portion of the kingdom. The annu. values deduced from this table have been considered too small to be used with safety. The table is regarded in France much as the *Northampton T.* is regarded in England. We give the annu. values deduced from it for the purposes of comparison.

We have seen how in the early part of the last century life annu. were applied for the purpose of raising money for Trading Corp. A century later, and they were very constantly employed as a means of raising money for parish improvements, as building, lighting, repairing churches, etc., etc. The speculation in them also continued. If we take a turn at the newspapers of this period, we shall find numerous examples of each class. We will quote such as best illustrate the practice then prevailing.

In the *Morning Advertiser* of 31st October, 1806, there appeared the following advertisements:

Cash for good bills and annu. to any amount during bus. hours at Humphryes and Co's., Navy Agents, No. 1, Sion Gardens, Aldermanbury, where the most liberal price will be given for well-secured annu. and merchandise. N.B. Tradesmen of credit accommodated on their own security, but no money agent will be treated with; nor letter received, unless post paid.

Money on Annuity.—Wanted immediately £100, for which an annu. of 10 guineas will be granted on the security of landed property of ample value. Letters from principals (post paid) appointing an interview addressed to K. R., at Peele's Coffee-house, Fleet-st., will be duly attended to and satisfactory references given.

Money.—£127,000 ready to be advanced on good security. Messrs. Lucan and Co. beg leave to inform those who may be in want, and desirous of borrowing temporary or permanent sums of money, and possessed of any property that can be assigned, that any part of the above money will be lent in sums from £100 to £10,000, on paying a fair and equitable annu. int. for the same, etc., etc.

In the *Times*, 3rd July, 1807:

Two thousand pounds will be given immediately for a well-secured annu. of £220—the grantor ins. his life. Address to S. D., Post-office, Grantham, Lincolnshire. More money to be laid out on the same terms. This is 11 p.c. for money, and 9 years' purchase nearly.

In the *Morning Advertiser*, 20th April, 1807, there was the following:

The Commissioners appointed to carry into execution an Act for better Paving, Lighting, and Watering the Parish of St. Nicholas, Deptford, in the County of Kent, will meet in the Vestry room of the said parish on Tuesday, the 28th April inst., at 6 o'clock in the evening, to receive proposals from such persons as are willing to purchase annu. to be paid quarterly during the natural life of the purchaser or any person to be nominated by him or them, out of the rates or assessments directed to be made by the said Act. *No annu. will be granted to any person under 40 years of age*, nor will more than £600 be taken for the purchase of any one annu. Proposals to be sent, sealed up, to the office of Mr. Parrell, solicitor, Slades place, Deptford, Kent.

In the *Morning Advertiser*, 8th June, 1807:

Annuities.—St. Mary at Hill, Lond. The vestry of this parish do hereby give notice that they are ready to receive proposals from such person or persons as may be willing to advance the said parish the sum of £700 upon one or more annuity or annuities to be secured for the life or lives of the person or persons advancing the same, but redeemable at the option of the said parish on six months' notice. Proposals in writing, sealed up, to be delivered at the office of Mr. Ludlow, No. 4 Monument yard, Lond., on or before the 18th June inst.

In the same year there appeared:

Life Annuities.—Greenwich, 7th August, 1807.—The parishioners of this parish being desirous to raise the sum of £1500 by annu. on lives, for the purpose of enlarging the Burial-ground of the said parish, do hereby give notice that all persons intending to propose for any part of the said annu. may leave their proposals (in writing, sealed up) with either of the churchwardens on any day (Sunday excepted) between 10 in the morning and two in the afternoon, setting forth the name and residence, the age, sum proposed for (which is not to be less than £50, nor more than £200 on any one life), the rate of int. required, and the day for the delivery of the proposal. Further particulars may be had by applying at the office of Messrs. Everett and Martyr, the Vestry Clerks, at Greenwich.

In the *Times*, 15th January, 1808, there was the following adv.:

Annuities for Lives.—Wanted to be borrowed by the united parishes of St. Mary-le-Bow, St. Pancras, Soper-lane, and Allhallows, Honey-lane, Lond., for the repairs of the parish church of St. Mary-le-Bow, in Cheapside, a further sum of money, not exceeding the sum of £600, upon annu. for

Age.	Royal Exchange.	Provident Life.
35	15.380	15.600
40	14.700	14.800
45	13.700	13.700
50	12.820	12.600
55	12.050	11.495
60	10.870	10.250
65	9.800	9.000
70	8.770	7.750
75	7.750	6.500

TABLE—4 p.c.

Age.	Years' Purchase.
10	17.882
15	17.154
20	16.442
25	15.747
30	15.021
35	14.214
40	13.286
45	12.218
50	11.026
55	9.709
60	8.342
65	6.965
70	5.635
75	4.420

In the *Morning Advertiser*, 5th March, 1808:

In the *Morning Advertiser*, 25th April, 1808:

The following is an abstract of the Tables:

Average price of each £100 stock transferred, being:

[illegible]

Survivor of Two Lives of Equal Ages, or not more than five years' difference. The first col. gives the ages of the two lives, or of the younger of the two :

Age.	50 and under 51.	55 and under 56.	60 and under 61.	65 and under 66.	70 and under 71.	75 and under 76.	80 and under 81.
35...3	10 0 ...	3 13 0 ...	3 15 0 ...	3 18 0 ...	4 0 0 ...	4 3 0 ...	4 5 0
40...3	14 0 ...	3 16 0 ...	3 19 0 ...	4 1 0 ...	4 4 0 ...	4 8 0 ...	4 11 0
45...3	17 0 ...	4 0 0 ...	4 3 0 ...	4 6 0 ...	4 9 0 ...	4 13 0 ...	4 16 0
50...4	0 0 ...	4 4 0 ...	4 8 0 ...	4 12 0 ...	4 16 0 ...	5 0 0 ...	5 4 0
55...4	7 0 ...	4 12 0 ...	4 16 0 ...	5 0 0 ...	5 5 0 ...	5 9 0 ...	5 14 0
60...4	13 0 ...	4 19 0 ...	5 4 0 ...	5 10 0 ...	5 15 0 ...	6 1 0 ...	6 6 0
65...5	5 0 ...	5 12 0 ...	5 18 0 ...	6 5 0 ...	6 11 0 ...	6 18 0 ...	7 4 0
70...6	2 0 ...	6 10 0 ...	6 18 0 ...	7 6 0 ...	7 15 0 ...	8 3 0 ...	8 11 0
75...7	7 0 ...	7 18 0 ...	8 9 0 ...	9 0 0 ...	9 11 0 ...	10 2 0 ...	10 14 0

Note—The first two columns of this Table were not included in the Act of 1808. They were supplemented by the Act of 1812.

No values beyond £80-81 are given in the tables, nor at that period did the stock ever reach that price. The scheme was propounded with a view to the reduction of the National Debt, and the annu. granted under it are called sinking fund annu. Returns of the amount of stock exchanged for such annu. were ordered to be laid ann. before Parl. In the following year the limit of the annuity or annuities to be granted on any one life was extended (by 49 Geo. III., c. 64) to £3000; and the personating of nominees, or forging certificates, made felony. In 1812, 1816, and 1817, further modifications.

We believe the recommendations from time to time made to the Gov. by Mr. Francis Baily, regarding the desirability of exchanging Gov. stocks for life annu., led to the passing of this measure. The annuitants of this class were included in the Obs. of Mr. John Finlaison in 1829, and of Mr. A. G. Finlaison in 1860.

Mr. Milne informs us that he mentioned the subject of these annu. more than once to a very able and well-informed member of the Gov., not long after the practice of granting them commenced. None were then granted on lives under 35 years of age; and the gentleman alluded to remarked that the applicants for annu. *were chiefly aged persons, and it was desirable that a safe and advantageous mode of employing their savings* should be afforded them. After 1816, those annu. were granted to persons of all ages above 21 years.

In 1808 Rev. Jeremiah Joyce pub. *The Arithmetic of Real Life*, which was stated to include "a complete reformation of all tables for calculation of annu., etc." We have never been able to meet with the work.

In 1809 Mr. Fortune, of the Stock Exchange, pub. a treatise on *National L. Annu.*

In 1810 was pub. the first vol. of Mr. Francis Baily's famous work: *The Doctrine of Life Annu., and Assu. analytically investigated and practically explained; together with several useful Tables connected with the subject. To which is now added an Appendix containing a new method of calculating and arranging such Tables.* The 2nd and concluding vol. was not pub. until 1813; but it will be more convenient to speak of the entire work at one time, and we propose to do so under the first date. The author says:

In the year 1808 I pub. a Treatise on the Doctrine of Int. and Annu., wherein I entered into a full investigation of all the principles relative to that science; together with its application in the various questions arising from any commercial, political, or financial inquiries. In the preface to that work, I signified my intention of prosecuting the subject still further, so as to take in the whole doctrine of life annu. and assu. The present treatise therefore must be regarded as a continuation of the work above alluded to; and will, I believe, contain all that is useful or interesting in the science. . . . The importance of the subject in the present day cannot be doubted. . . . The incomes likewise annexed to all places, civil and military; all pensions and most charitable donations; these and others of a like kind are annu. for life. Moreover the dividends arising from a great part of the cap. in the public funds are, by the wills of the donors, and from other causes, rendered of the same nature. Besides which, many life annu. have been granted by individuals, by parishes, by corp. bodies, and by the Gov. itself. So that a great part of the personal estate also of this country is involved in a consideration of this subject.

This work, from which we shall have occasion to quote very frequently in these pages, was in many respects the most practical and the most able which had appeared on the subject of Life Annu.

An appendix to the 2nd vol. was principally devoted to the purpose of explaining the construction and uses of tables for determining values of Life Annu., calculated at a vast sacrifice of time and labour by Mr. George Barrett since deceased; formulæ were given for calculating from tables of that kind the values of temporary and deferred Life Annu. and Assu., and also for determining the values of Annu. and Assu. when the annu. or the sum assu., instead of remaining always the same, increases or decreases from year to year by equal differences, with considerably greater facility and expedition than the same things could have been effected with by the tables and methods of calculation in previous use.—*Milne.*

In this year (1810) also Mr. Wm. Campbell pub. *The Values of Annu.*, from £1 to £1000 p.a. on single lives from the age of 1 to 90 years; with the number of years' purchase each annuity is worth, and the rate of int. the purchaser receives. With the amount of the several rates of the legacy duty payable according to the statute on the value of annu. This vol. had absorbed a vast amount of labour. Its use has now passed away.

In 1811 Mr. Wm. Inwood pub. first ed. of his now famous tables, and therein were contained tables of annuity values, etc.

In 1812 Mr. Francis Baily presented to the Royal Society an account of the labours of Mr. George Barrett, of Petworth, who clearly was the first discoverer *in England* of the modern arrangement of Life Tables. Mr. Baily says :

The more immediate object that I have in view is to lay before the So. a *new* method of arranging the tables for determining the value of life annu. : whereby a considerable portion of the time and labour employed in such calculations may be avoided, and their application to the solution of various problems connected with the subject rendered more extensive and easy.

There has been some controversy upon the question of priority of discovery of the method employed by Barrett, and we shall refer to it more in detail under head of COLUMNAR METHOD.

In 1812, by the 52 Geo. III. c. 129, the Acts of 1808-9 were amended to the extent that whereas in these Acts no provisions were made for regulating the value of annu. when the price of 3 p.c. Consolidated or reduced Bank Annu. should be under £60 or above £81, this present Act provided detailed values for fluctuation in prices between £50 and £60, and further provided that for values beyond £81, the annu. should be the same as for the value £81. To prevent the multiplying of tabular matter, we have included the values between £50 and £60 in the abstract of the table given in our notice of the Act of 1808.

In 1813, by 53 Geo. III. c. 141, sec. 2, *The Amended Annu. Inrolment Act* (which repealed the Act of 1777), it was enacted that within 30 days after the execution of every bond, instrument, or other assu., whereby any annu. or rent-charge should be granted for one or more life or lives, or for any term of years, or greater estate determinable on one or more life or lives, a memorial of the date of every such deed, bond, instrument, or other assurance, of the names of all the parties and all the witnesses thereto, and of the person or persons for whose life or lives such annu. or rent-charge should be granted, and of the person or persons by whom the same was to be beneficially received ; the pecuniary consideration or considerations for granting the same, and the annual sum or sums to be paid, should be inrolled in the High Court of Chancery, in the form provided by that Act. Otherwise every such deed, bond, instrument, or other assurance should be null and void to all intents and purposes.

By sec. 3 of the same Act, it is further enacted that if any such annu. should be granted by, or to, or for the benefit of, any co. exceeding in number ten persons, which co. shall be formed for the purpose of granting or purchasing annu., it should be sufficient in any such memorial to describe such co. by the usual firm or name of trade. By sec. 8 all contracts for the purchase of an annuity with any person being under the age of 21 years should be and remain utterly void ; any attempt to confirm the same after such person shall attain the age of 21 years notwithstanding.

The Act did not extend to Scotland or Ireland.

This Act was drawn by Mr. Sugden (now Lord St. Leonards), and its general effect was—for it required and received several amendments in details—to render applications to the Courts to set aside “unconscionable bargains” of comparatively rare occurrence ; and to place securities for L. annu. on as firm a foundation as any other class of security.

It is a remarkable fact, already noted, that the Tuscan Gov. by a law dated 30 Dec., 1814, authorized the use of Ulpian's Table for the valuation of L. annu.—a table that had lain dormant probably for near sixteen hundred years ; and this too in the face of the existence of all the Tables we have here recounted as having been brought into existence since—with all their acknowledged and progressive improvements.

Again we reach another very important land-mark—a double one—in the history of L. Annu.—that is, the pub. by Mr. Joshua Milne, in 1815—the Waterloo year—of *A Treatise on the Valuation of Annu. and Assu.*, etc., in which was contained, and first made known, the since famous CARLISLE TABLE OF MORT. The work contained 50 T. of money values, all calculated upon results deduced from this new Mort. T. : those relating to L. Annu. being calculated upon the same extended scale as the T. deduced by Dr. Price from the Northampton Table.

The work of Mr. Milne, apart from the fact of its containing the *Carlisle T.*, has always been justly regarded as one of very great weight and authority. We shall have occasion to make the reader familiar with a considerable portion of its contents in the course of these pages. The author gives in the introduction of the work the following outline of its contents, combined with some interesting notes on the labours of his predecessors :

The values of annu. on lives are treated of in the 4th chap., and it will be found that the most intricate questions respecting them may be solved by means of tables containing the values of annu. on the lives involved, considered singly, and on the joint continuance of the lives in the different combinations that may be formed out of them. An easy and expeditious method of calculating such tables is furnished in the solution of the first problem, and its practical applications are illustrated by logarithmical formulæ, and specimens of the computations.

From hence it must be obvious that that first problem is of great importance in these inquiries ; in fact, we owe all the best tables of the values of annu. on lives that have been calculated to the formula by which it is resolved, and for that formula we are indebted to Mr. Simpson, who at first gave it in the 7th corollary to the first problem in the *Doctrine of Annu.* in the year 1742, and showed its extensive utility.

It is remarkable that altho' the method of calculation indicated by the formula last mentioned is so simple that the truth of it may easily be demonstrated without algebra, and the labour saved by it is prodigious, yet it did not occur to our celebrated countryman Dr. Halley, who first constructed a table of mort., and showed how the prob. of life and death, and the values of annu. on lives, might be determined by such tables: he informs us that he had endeavoured in vain to discover a shorter method of calculation than that which he employed. Euler too was at one time stopped by this difficulty, but afterwards fell upon the method which Simpson had previously pub.

It is still more remarkable that M. de Parcieux, who has repeatedly mentioned Mr. Simpson's work, should not have availed himself of that compendious method of calculation, in constructing the tables of the values of annu. on single lives which he has given. They have cost him nearly 50 times the labour which would have been required in that way, and the chances of error have been multiplied in the same proportion: the necessary inference is that De Parcieux had not read this part of Simpson's treatise; it is also mentioned both by St. Cyran and Florencourt, and the same remarks apply to them, with reference to the tables of life annu. they have pub.

After further enumerating in a very careful manner the labours of his predecessors—or rather we should say, of some of the principal of his predecessors—in reference to the construction of Mort. T., he continues:

As none of these tables appear to me to give the values of life annu. for the common average of England, or for the bulk of the people in most of the other countries of Europe at present, with sufficient accuracy, I have calculated those in this work, by which in my opinion the values of life-interests in general, at least in this country, may be determined nearer than by any others extant; but this depends principally upon the determination of the law of mort., and that is discussed in its proper place.

The annuity values deduced from this the CARLISLE Table, are given in the margin.

Mr. Milne added the following, in which most of us will concur: "It may be useful to observe, that it is of much greater importance that T. of Values of L. Annu. should be derived from the true law of Mort., than that those which are calculated from any one T. of Mort. should be very copious."

In 1816, by the 56 Geo. III. c. 53, it was enacted that Long Annu. might (in add. to Consolidated and Bank annu.) be exchanged on annu. on the lives of the holders or their nominees under the provisions of the Acts of 1808, 1809, and 1812, the values to be governed by the prices quoted in the *Gazette* from time to time. Provision was also made as to payments of annu. to nominees who should go to reside abroad after annu. were granted; but only in Kingdoms or States in Europe "in amity with his Majesty"!

Early in this year, Mr. Preston, M.P., moved in the H. of Commons for leave to bring in a Bill *To restrain the Grants of Annu. on the terms of being re-purchasable*. This was opposed by Mr. Serjeant Onslow, on the ground that such a Bill would increase the distress it sought to remedy; as most assuredly it would. Leave was given to bring in the Bill, but it was not proceeded with.

In this year also Mr. Wm. Rouse pub. *An Investigation of the Errors of all writers on Annu.*, in their valuation of half-yearly and quarterly payments; including those of Sir Isaac Newton, De Moivre, Dr. Price, Mr. Morgan, Dr. Hutton, etc., etc. With tables showing the correct values, when payments are made in less periods than yearly: and a specimen of a set of tables on a new principle (now in the press) for the valuation of leases, estates, annu., church livings, or any income whatever.

In 1816 also Mr. Milne's famous art. on *Annu.* appeared in the Supplement to the *Ency. Brit.*, to which all subsequent writers on the subject, including ourselves, have become more or less indebted. In the same year there appeared in *Thom. Ann. Phil.* a paper *On Annu.*, on Imaginary Cube Roots, Roots of Binomials, by Mr. W. J. Horner; and in No. 13 of the *Pamphleteer*, a paper by Mr. E. B. Sugden: *Considerations on the rate of Int. and on redeemable Annuities*.

In 1817, by 57 Geo. III. c. 26, some important modifications were made regarding the granting of Gov. L. Annu. By the previous Acts no annu. could be obtained except in exchange for Gov. Stocks, and none whatever on the lives of persons or nominees under the age of 35. By this Act annu. could be purchased for money, although the amount of the annu. was still made to depend upon the price of Consolidated or Reduced Bank Annu. (at the option of the purchaser). The age of annu. or nominees was reduced to 21; and £4 and £5 p.c. annu. stock was permitted to be exchanged for L. annu., the values of such stocks being first reduced to the values of 3 p.c. annu., in order to regulate the amount of the annu. to be granted. The Act also permitted the sale of deferred annu. We find it recorded that at the end of eleven years, or in 1828, the Commissioners had only sold annu. of this class involving a payment of £14,000 p.a.

In this year Mr. Fred. Blayney pub. *A Practical Treatise on L. Annu.*, including the Annu. Acts of the 17th and 53rd Geo. III.; also a synopsis of all the principal adjudged cases under the first Act, together with select modern, and useful precedents, etc.

In 1818 a Com. of the H. of Commons sat on the Usury Laws, and various witnesses were examined. The Committee found in its resolutions (*inter alia*) that of late years the

Table—4 p.c.

Age.	Years' Purchase.
10	19.585
15	18.956
20	18.363
25	17.645
30	16.852
35	16.041
40	15.074
45	14.104
50	12.869
55	11.300
60	9.663
65	8.307
70	6.709
75	5.239

constant excess of the market rate of int. above the rate limited by law, had added to the expense incurred by borrowers on real security, and that such borrowers had been compelled to resort to the mode of granting annu. on lives; a mode which has been made a cover for obtaining a higher rate of int. than the rate limited by law, and has further subjected the borrowers to enormous charges, or forced them to make very disadvantageous sales of their estates.

One of the witnesses called before the Committee was Mr. Sugden (now Lord St. Leonards). He stated that when the market-rate of int. was above the legal rate, the landed proprietor was compelled to resort to some shift to evade the Usury Laws. He had known annu. granted for three lives at 10 p.c. upon fee-simple estates unincumbered, and of great annual value, in a Register County. He had also known annu. granted for four lives, and more would have been added, but for the danger of Equity setting aside the transaction on account of the inadequacy of the consideration. Latterly, many annuities were granted for a term of years certain, not depending on lives. On being asked whether, were there no laws limiting the rate of int., better terms could or could not have been obtained, he answered: I am decidedly of opinion that better terms could have been obtained: for there is a stigma which attaches to men who lend money upon annu. that drives all respectable men out of the market. Some leading men did latterly embark in such transactions, but I never knew a man of reputation in my own profession lend money in such a manner, although we have the best means of ascertaining the safest securities, and of obtaining the best terms.

In 1818 also Mr. John Clark, who was then engaged in founding the *European* (No. 1), wrote a pamphlet in support of the claims of that office, on the ground that it meant to conduct annuity transactions on more equitable terms than had formerly prevailed. He says:

Annu. at present are either certain or redeemable, at the option of the grantor: if certain, they pay the annu. amounting to 12, 14, 16, or 18 p.c., as long as the life or lives selected shall continue to exist; but if redeemable, it may be paid off at any period, by six months' notice, or six months' advance of the annu., in addition to the sum originally borrowed. In either case the terms are hard on the grantor, who, perhaps, through some temporary want of a particular sum, is induced to grant an annu. at the high rate before stated, which he must either continue to pay as long as he lives, or return the sum originally borrowed, after having paid perhaps an excessive annu. for years.

It may be well here to state that the practice of dealing in annu. so far as ins. offices were concerned was almost the reverse of what it is now. The office, instead of receiving a principal sum of money, in consideration of which it was to grant an annu. for the life of some particular person, used to advance a sum of money, in respect of which the borrower agreed to pay a certain annuity—often varying from 12 to 18 p.c.—during the remainder of his life. This method of dealing in annu. originated, as we have already intimated, in the sixteenth or seventeenth cent.; and was designed especially to evade the Usury Laws.

In 1819 there appeared in Dr. Rees' Cyclopædia, an art. on *L. Annu.* This was written by Mr. W. Morgan. In the same year there was pub. by Wm. Tate, *The Calculations of L. Annu., and the Public Funds Simplified and Explained*, etc.

In 1820 Mr. Wm. Hendry pub., *The Method of Calculating the Values of Life Annu., Assu., Fines Payable on the Renewing of Leases, etc., etc.*; with an appendix containing Tables of the Values of Life Annu. by Stat. 36 Geo. III. c. 52.

In 1821 the 2nd ed. of Mr. Morgan's *Principles and Doctrine of Assu. and Annu. on Lives* was pub. The formulæ for determining the values of contingent reversions, originally given by the author in the *Phil. Trans.*, were in this ed. substituted for the approximations given in the 1st ed.; and it contained tables of the Values of Annu. on single and joint lives calculated from the *Northampton* and *Swedish* Tables, taken from Dr. Price's *Observations*, etc. Otherwise there was nothing new, except a T. showing the number of persons ins. in the *Equitable* So. who died of each disease in each decade of age from 10 years to 80, and above 80 years of age during the term of 20 years, commencing with 1801. The want of a proper explanation of the facts connected with the compilation of this T. led to some misunderstanding, of which we shall speak under *EQUITABLE EXPERIENCE TABLE*.

In 1821 Mr. J. B. Benwell pub. *An Essay on Int. and Annu.*, chiefly respecting those cases when compounded by instalments intercepted within yearly, as half-yearly, quarterly, momentarily; embracing a summary of the ambiguities averred of the solutions on Dr. Price's and De Moivre's principle, with a critical examination into the source of them, etc.

In 1822 an Act was passed, 3 Geo. IV. c. 92, to explain the Act of 1813 regarding the inrolment of memorials of grants of annu. There is nothing very special in it. An annu. deed, a memorial of which had been inrolled, was declared valid, though the deed itself had not been inrolled (sec. 2). This Act was not to give add. validity to any deed, nor to give effect to any deed declared void, or affect any proceedings at law commenced before 31 May, 1822.

In 1823 Mr. R. Thomas pub. *Tables of the Values of Annu. and Assu.*

In 1824 Mr. Francis Corboux pub. *An Inquiry into the State of the National Debt*, in which was embodied a plan of finance for the redemption of the National Debt, upon the principle of Terminable Annu.; and an appendix on State Lotteries, with suggestions

respecting a perpetual lottery "upon a system equitable, productive, and unobjectionable," in aid of the plan of redemption.

In the same year Mr. Peter Watt pub. *Comparative Tables of Rates of L. Assu. demanded in Scotland*: with an exposition of the doctrine of Life Ins. and annu.: showing how the rates are calculated, and the present value ascertained, when claimed on a bankrupt estate or sold for their true value.

In 1825 Mr. Francis Corbaux pub. *The Doctrine of Compound Int. illustrated and applied to Perpetual Annuities, to those for terms of years certain, to L. Annu., etc.*, with Tables giving the current values of annu. on single and joint lives. This, like Mr. Corbaux's other works, is ably written. The author says:

Annu. on single or on joint lives, . . . with other prospective transactions, equally founded upon the operation of compound int. combined with the chances affecting the duration of human life, collectively form a copious subject, already enlarged upon by able writers of this and other countries. The intention, here, is therefore to treat that subject with great brevity: merely stating the general principles upon which it rests, with so much of their application as will be sufficient for estab. the basis of calculations relative to the transactions above described; and superadding a few tables which, occasionally consulted, may so far guide the unpretending reader as at least to prevent his being betrayed into gross errors, upon a matter beset with difficulties, and involving considerations of a delicate and complicated nature.

In 1825 a Committee of the H. of Commons sat upon Friendly Sos., among the witnesses examined were Mr. Finlaison, Mr. W. Morgan, Mr. Joshua Milne, Mr. Friend, and others. The Committee pub. a report, in the appendix to which is contained a most valuable collection of Tables relating to sickness, annu., and the law of mort., as prepared by Dr. Price, Mr. Morgan, Mr. Glenny, Mr. Finlaison, and others. The remaining space at our command for the completion of the present art. will not allow us to dwell upon this. We shall, however, have occasion to notice these Tables in various parts of this work. [FRIENDLY SOS.] [SICKNESS.]

By the Bankruptcy Amendment Act, 6 Geo. IV. c. 16, sec. 54 (1825), it was provided that an annuitant might prove for value of annu. on bankrupt estate, regard being had to its original cost, and the depreciated value by lapse of time. No T. of mort. was specified.

In 1825 Mr. Geo. Thatcher pub. *A Treatise on Annu. for fixed periods, particularly Gov. Long. Annu.*, showing a defect in theory, with its remedy; and when annu. are dear and cheap. To which was added a practical T. for calculating long annu.

In 1825, or early in 1826, Mr. Griffith Davies pub. his *Tables of Life Contingencies*; and therein was contained a T. of the mort. which had prevailed among the lives ins. in the *Equitable So.* at all ages above 10, based upon the statement of Mr. Morgan, already referred to (1821). Mr. Davies gave Tables of the values of annu. on single and joint lives, calculated both from the Table he had constructed [EQUITABLE EXPERIENCE] and from the *Northampton T.*, rather fuller and more complete than any that had been pub. previously: except that those derived from the mort. of the *Equitable* necessarily included no ages under 10. The values according to the *Northampton T.* were given only at the rates of 3 and 4 p.c. int.; but Mr. Davies, not content to take them on Dr. Price's authority, had, like Mr. Babbage, calculated them anew, and, as well as the other values of annu., has carried them to four places of decimals.—*Milne.*

The Annuity Values as deduced by Mr. Davies from the *Equitable Experience* are as annexed:

In comparing this table with others, it must be borne in mind that a great majority of ins. lives are males, on which account the values are somewhat lower, especially from 15 to 55 years of age, than they would have been had there been nearly equal numbers of both sexes.

In 1826 was passed another Act, 7 Geo. IV. c. 75, to further explain the Act of 1813 regarding the inrolment of memorials of grants of annu. It merely defines what witnesses are required.

In 1826 also Mr. Charles Babbage pub. his *Comparative View of the various Institutions for the Assu. of Lives.*

In that work he also gave a T. of the mort. which had prevailed among the ins. lives in the *Equitable*, at all ages above 10 years, based upon Mr. Morgan's statement (1821); and a T. of the value of annu. based thereon. He also gave formulæ and Tables not materially differing from those of Mr. Barrett, for determining the values of temporary and deferred, as well as increasing or decreasing, annuities, and assu. on single lives: these T. being derived from his own T. of the EQUITABLE EXPERIENCE, and from the CARLISLE Table.

This work of Mr. Babbage's did much to draw popular attention to the subject of life annu. and life ins. It was reviewed in the *Edinburgh and Quarterly Reviews*; and it was also translated into the German. [BABBAGE, CHARLES.]

His Table of annu. values from the EQUITABLE EXPERIENCE is given on the next page. It must be remembered, in comparing it with others, that it is calculated at

TABLE—4 p.c.

Age.	Years' Purchase.	Age.	Years' Purchase.
10	19·647	45	13·845
15	18·944	50	12·599
20	18·242	55	11·349
25	17·494	60	10·052
30	16·701	65	8·635
35	15·867	70	7·167
40	14·939	75	5·670

3 p.c. We annex the CARLISLE 3 p.c. annuity values in a parallel col. for purposes of comparison.

<i>Carlisle Table.</i> 3 p.c.		<i>Equitable</i> <i>Exp.—3 p.c.</i>	<i>Carlisle Table.</i> 3 p.c.		<i>Equitable</i> <i>Exp.—3 p.c.</i>
Age.	Years' Purchase.	Years' Purchase.	Age.	Years' Purchase.	Years' Purchase.
10	23·512	23·768	50	14·303	14·477
15	22·582	22·804	55	12·408	13·006
20	21·694	21·795	60	10·491	11·539
25	20·665	20·734	65	8·917	9·981
30	19·556	19·671	70	7·123	8·285
35	18·433	18·548	75	5·512	6·394
40	17·143	17·351	80	4·365	4·314
45	15·863	15·965			

In 1827 another Committee of the H. of Commons on F. Sos. was appointed and sat ; this time really with the view of eliciting information on the law of Mort., and the values of L. Annu. and Assu. in this country. The report of the Committee of 1825 was referred to this committee for consideration. Among the witnesses examined were Mr. Joshua Milne, Mr. Francis Baily, Mr. Charles Babbage, Mr. Benjamin Gompertz, Mr. John Naylor, Mr. Griffith Davies, Mr. J. D. Bailey, Mr. W. Morgan, and Mr. John Pensam, all men of known position in the then actuarial world. It is sufficient to say that the report abounds with information on annu. values, and kindred subjects ; and that the appendix contains many tables of great interest.

As both this and the report of 1825 are now very rarely to be met with, it may be well to state that their substance will be given in these pages as the various topics to which they apply shall arise.

The scale for granting Gov. L. annu. under Mr. Perceval's scheme in 1808 had been calculated upon the *Northampton T.* As early as 1819 Mr. John Finlaison had demonstrated to Mr. Vansittart, that in consequence of the errors of these tables, the country was losing £8000 p. *month*. The demonstration, however, did not carry conviction to the mind of the Chancellor of the Exchequer ; and even his successor Mr. Robinson paid no attention to the representation.

Mr. Finlaison addressed another letter, dated 30th April, 1827, to the Sec. of the Treasury, in which he showed that the loss occurring to the nation by means of these annu. was now at the rate of £8000 p. *week*, and that the loss in the preceding 3 months had amounted to £95,000 and upwards.

This last letter appears to have produced the desired effect, for in 1828 the National Finance Committee reported, that "having in the course of their inquiries discovered that the conditions under which the Commissioners of the Sinking Fund are required by the Act for enabling the Commissioners of the National Debt to grant annu. are extremely disadvantageous to the public, they feel it to be their duty to call the immediate attention of the House to the expediency of repealing that Act." The grant of L. Annu. on the *Northampton* rates was accordingly suspended on the 25th July, 1828 ; all the preceding Acts relating thereto being repealed. This was preparatory to the measure to be introduced in the following session.

In 1828 Mr. Edward Hulley pub. *Tables showing the Values of Annu. and Assu. upon lives of equal ages, in single and ann. payments, according to the NORTHAMPTON T. MORT., rate of int. 3 p.c. ;* to which were added, examples and remarks illustrative of the method of determining the present values of these reversions analytically.

In the same year Mr. Lubbock read before the Cambridge Phil. So. a paper *On the Calculation of Annu., and on some questions in the theory of Chances ;* and the same was pub. in the *Trans.* of that So. The paper is reprinted in vol. v. of the *Assu. Mag.*, p. 197. In the following year (1829) Mr. Lubbock read another paper before the same So., *On the Comparison of Various Tables of Annu.*, which was also pub. in the *Trans.*, and reprinted in vol. v. of *Assu. Mag.*, p. 277.

In 1829 a Select Committee of the House of Commons was appointed "to consider the petition of Cadogan Williams, recommending the purchase of *Life Annu.* under the authority of Gov." Turning to the petition, we find the following :

Your petitioner, who has paid much attention to the subject of assu. as they apply to the circumstances of the lower classes of society, does most humbly suggest as his opinion that it would be conferring great benefit on society in general, and the lower classes in particular, were the opportunity given them of buying an annu. to be paid them in the event they attained the age of 60 years, as it would be putting the lower classes in possession of means to make a provision against old age, which they do not at present possess. Your petitioner does further beg to suggest, that such assu. is unlimited in its application in a civilized country, and might be estab. and conducted under the authority of His Majesty's Gov., as there would be no risk of imposition from its members, it being dependent upon natural results, and in no wise on morals, which most other assu. cos. are more or less ; and the contingency of pestilence which, were it to happen, might be trying to the resources of some cos., would be in its favour !

The document is unique ; but a Committee was appointed ; and in due course reported (*inter alia*) that

To the wealthy, and even to those who possess even a moderate share of affluence, numerous opportunities are afforded by the ins. offices and by Gov. securities, of providing incomes contingent upon remote events ; while the humbler classes, to whom the means of insuring independence in advanced life are even more important, have hitherto enjoyed no opportunities of accomplishing this most desirable end.

The Committee stated, on the authority of Mr. Finlaison, that "a weekly payment of 2s. continued from 20 to 30 years of age will secure to the contributor a life annu. of £20 p.a., to commence at the age of 55 ; a similar payment of 11½d. from 20 years of age to 55 will secure to the contributor a life annu. of £20 from the termination of his contribution." The Committee suggest that the Savings Banks might be used to aid in the extension of the system ; and this plan was actually adopted in 1853.

Strange to say, the Committee do not refer to an Act before the House that very session and passed into law, by which an annual payment of not less than £5 might be made available for the purchase of a deferred annu. ; although one of the witnesses called attention to the same. The Committee made no other suggestions except that, if re-appointed next session, they would try to frame a measure. The vicissitudes of parliamentary life are great ; and they were not re-appointed.

The Act of 1829 just referred to was the 10 Geo. IV. c. 24. By authority of its provisions a new era was commenced in this branch of national finance. The preamble recites : "*And it is expedient that the said Commissioners (of the National Debt) should be enabled to grant such annu. in future according to the duration of human life, as ascertained by recent Tables of Obs. thereon.*" The Act then provides that annu. shall not be granted on any life or nominee under 15 years of age, with power to the Commissioners to decline granting an annu. on "sufficient grounds." Annu. might be purchased with money or by transfer of stock, but no stock less than £100 to be received. A new provision enabling the Commissioners to receive sums of not less than £5 p.a. for purchase of deferred annu. was introduced for the especial benefit of the industrial classes. The nominees were still to be residents in the U. K. All stocks to be converted into 3 p.c. before being exchanged. All money paid for purchase to be applied to reduction of National Debt. The tables of annuity values to be approved from time to time by the Commissioners of the Treasury, or any three of them ; but such tables might be altered, revoked, or recalled, and new ones substituted, on proper notice given in the *Gazette*. Tables for time being in use to govern value of annu. to be granted. L. annu. under this Act to be carried to same account as those formerly granted. Annuities for years to be carried to separate account. Proof of age required : if no proof of birth, age at baptism taken. Persons might purchase annuities on lives of other persons' nominees, there being no restriction in this Act of amount of annu. to be granted on any one life. On death of annuitant, a quarter's annu. to be payable. L. annu. might be trans., in one amount, but nominee must not be changed ; annu. for years might be transferred in one or more amounts. Registers, transfers, and receipts exempt from stamp duty. Heavy penalties for fraud. Accounts of annuities granted to be laid before Parliament.

The tables to be used in connexion with the Act, as they were liable to be changed, were not appended to the Act, but pub. separately. From the Tables first calculated, in conformity with this Act, some curious results have flown. In the first place, the new tables had been adopted with a view to prevent the loss which the former tables were on all hands admitted to have produced. Again, these new tables were calculated from materials in which the Gov. advisers had entire confidence—so much confidence, perhaps, that some very obvious defects in them were overlooked. They were indeed constructed from what may be termed selected lives : but the entire question of selection was not then sufficiently understood. *The influence of selection is inherent to newly selected lives. It wears off after a series of years.* To be efficacious it must be fresh. Selection was soon made against these tables, in a manner not before contemplated. The tables first adopted under the Act authorized an annuity of £62 to a man aged 90 for each £100 sunk. The first payment 3 months after the purchase. Shrewd gentlemen from the ins. offices, and from the Stock Exchange—aye, even the Commissioners of Greenwich Hospital, who were not always accredited with being the shrewdest of men—saw an opportunity, and availed themselves of it. In a word, a system of speculation in L. annu. set in equal to that of any former period, and far more certain in its results to the individual operators. Agents were sent off to the north : to the hills of Cumberland, and the glens of Scotland. Robust men aged 90 were at a premium. Yorkshire was not overlooked : there were numerous old men residing in the glorious scenery of the West and North Ridings, whom to secure as nominees was to secure a fortune. There are numerous records current of the fortunes made by private speculators : of these we take little heed : but under head of GOVERNMENT ANNUITANTS we shall adduce some authentic statistics which furnish results of real value.

The mistake was discovered and stopped by the removal of the advanced ages from the Table—but not till serious loss had resulted. We observe the following note to the tables now in use : "The Commissioners, etc., give notice that they will not grant any

annuity under the provisions of the Act upon the continuance of the life of any male or female nominee above the age of 65, unless the nominee shall have *bonâ fide a beneficial interest in such annuity.*"

In 1829 Mr. John Finlaison, the Actuary to the Commissioners of the National Debt, laid before Parl. an elaborate report, upon which he had been engaged for a period of 10 years, on the duration of life of the purchasers of the life annuities granted by Gov. under the Acts already enumerated, and among the nominees of the several Tontines to which we have referred. The following is a summary of the principal Tables in this report.

1. Observations on the *English Tontine*, which commenced in July, 1693—the last member dying in 1783—embracing 1002 lives.
2. Ditto L. annu. issued at the Exchequer, in 1745, 1746, 1757, 1766, 1778, and 1779, embracing 2552 lives.
3. Ditto three *Irish Tontines* of 1773, 1775, and 1778, embracing 3557 lives.
4. Great *English Tontine* of 1789, embracing 3495 selected lives.
5. Ditto lives chosen by lot, 4831 lives.
6. Ditto on the lives of the two last classes combined after age 50—both sexes.
7. Ditto on the Mort. of the nominees of L. annu. chargeable on the Sinking Fund issued in 1808, and in every subsequent year, 6892 lives.

The other tables show the results obtained from the same data for the sexes separately.

The following are annu. values deduced from each of the preceding tables ; 4 p.c. int., both sexes combined :

Age.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
5	17'7000	19'6346	19'6606	19'5063	19'4222	...	...
10	17'1280	19'3200	19'1770	19'1671	19'0681	...	...
15	16'2069	18'5130	18'4903	18'4745	18'4515	...	...
20	15'3488	17'6667	17'8638	18'0109	17'9464	...	...
25	14'9756	16'9129	17'4756	17'5263	17'5298	...	...
30	14'6238	16'3012	16'9123	16'8890	16'9254	...	...
35	14'0232	15'5199	16'2085	16'0981	16'0993	...	...
40	13'1927	14'4914	15'3857	15'1951	15'1244	...	...
45	12'1993	13'3046	14'3469	14'0608	13'9851	...	15'1582
50	11'1826	11'9377	13'0971	12'6705	12'5279	...	13'9467
55	10'1410	10'5021	11'6579	...	...	11'1625	12'4766
60	8'8359	8'9249	9'9952	...	...	9'7720	10'8863
65	7'3423	7'4780	8'3449	...	...	8'3077	9'0814
70	5'8225	6'2792	6'7932	...	...	6'7293	7'3579
75	4'4564	5'2345	5'4258	...	...	5'1216	5'7889
80	3'1335	4'1890	4'0076	...	...	3'7445	4'3266
85	2'4075	3'1238	2'9272	...	...	2'7787	2'8251
90	2'0352	2'0092	1'7873	...	...	...	1'4767
95	'9364	1'1752	...	...	...	...	...

The annu. values deduced from the lives included in column No. 1 will be observed to be much less than those given in any of the other columns. This has led to various surmises. It will be noted that the lives included belong to an earlier period—to the previous century. But could that alone account for the difference? No. The real facts appear to be that Tontine projects being new in England, the lives *were very badly selected*. In the absence of exact information, it was natural to conclude that the younger the lives nominated, the greater the chance of survivorship. Experience has shown that there is a limitation in this respect. The mort. tables show that a life aged 5 has a better chance of living than a life aged 1 ; and a life at 10 a better chance than a life at 5. Now, more than half the lives in the 1693 Tontine were under 11 when nominated, and more than one-fourth were under 6 ; and then, as male children frequently appear more robust than females, a larger proportion of males were selected. This was mistake number two. Subsequent investigations have shown that females are much better lives for such purposes than males. But at the period of these early Tontines—to which we have called special attention in the progress of this chapter—there is reason to suppose that even Dr. Halley was not aware of this fact. Mr. Milne thinks it probable that on account of their beauty and healthy appearance many children of scrofulous constitutions may have been selected. They on an average would be short-lived. Again, many of the nominees probably resided in Lond. or other large and crowded towns. This would add another cause of deterioration. The nominees in some French Tontines of about the same period were much better lives, as is shown by the annu. values deduced from their experience by De Parcieux.

It is curious to note the small difference between the results of columns 4 and 5 in the above table. The lives from which the results in No. 4 were deduced were *selected*. Those upon which No. 5 is based were chosen by lot ; but they were taken from the upper and middle classes of society—as indeed in all prob. were those of No. 4. A considerable majority of females were included in No. 4 ; and of males in No. 5. It is probable that the different proportion of the sexes really accounts for the small difference in results that obtains ; and not the influence of selection in any form.

The following Table shows the values of annu. as deduced from the mort. of the whole of the Male and Female Lives in the preceding 7 Tables, taken separately ; int. 4 p.c.

Age.	Male.	Female.	Differences.	Age.	Male.	Female.	Differences.
5	19·0305	19·7000	·6695	50	12·0654	13·3345	1·2691
10	18·4973	19·4296	·9323	55	10·6910	11·9703	1·2793
15	17·7160	18·8094	1·0934	60	9·2084	10·4477	1·2393
20	17·0682	18·3100	1·2418	65	7·7256	8·7908	1·0652
25	16·7649	17·7416	·9767	70	6·3599	7·1624	·8025
30	16·2891	17·1072	·8181	75	5·1524	5·6409	·4885
35	15·5179	16·3874	·8595	80	3·8845	4·3125	·4280
40	14·6000	15·5208	·9208	85	2·8465	3·1648	·3183
45	13·5026	14·4807	·9781	90	2·1593	2·1172	

The superior value of female lives had been shown by previous writers, as, for instance, by Dr. Price in his T. for Sweden and Finland ; but not in the same degree as is shown here, and some of the individual tables of Mr. Finlaison show even greater differences than these shown by the combined tables.

It would be interesting to compare the actual mort. under No. 1 obs. with the estimated mort. of the Table we have given under date 1692. There were but 1002 lives exposed to risk instead of the 10,000 contemplated. That Table predicted that the last life would drop in 1792, surviving 99 years from the date of nomination. As a matter of fact, the last life (of the smaller number) died in 1783, having lived 90 years after nomination.

On the 30th March, 1829, Mr. J. W. Lubbock (now Sir J. W. Lubbock, Bart.) read before the *Cambridge Philosophical So.* a paper *On the Comparison of Various T. of Annuities* ; and the same was pub. in the *Trans.* of that So. shortly afterwards. An abridgment of this paper was pub. in *Assu. Mag.* v., p. 277.

In this same year, 1829, Mr. Higham, the then Comptroller of the National Debt Office, proposed a plan for granting life, deferred, and term annuities, in connexion with Savings Banks, very similar to that adopted in 1833. Indeed, there cannot be much doubt that the Act of that year was based upon his recommendations.

In 1829 also Mr. James J. Duncan pub. in *Glasgow Tables on the Prob. and Expectation of Male and Female Life in Glasgow ; and of the Value of Annu. on Single Lives at all Ages, distinguishing the Sexes, at the several Rates of Int. of 3, 4, 5, and 6 p.c., deduced from the Glasgow Pop. and Mort. Bills, on an average of 6 years, from 1821 to 1827.* The author says :

I have used a little liberty with the *prob.* in ascertaining the value of the annu. This was done to avoid the apparent inconsistency of, for example, age 90 of males showing a lower value than age 91 : which a strict adherence to the *prob.*, as shown in the T., would bring out. As this liberty, however, has only been taken in one or two of these extreme ages, it can lead to no practical error.

He, in fact, adjusted the T. for these extreme ages. The following is an abstract of his Annu. T. ; int. 4 p.c. :

Age.	Male.	Female.	Age.	Male.	Female.
0	13·590	14·092	55	9·467	10·234
5	18·391	18·918	60	8·015	8·830
10	18·334	18·954	65	6·405	7·321
15	17·551	18·394	70	5·071	5·838
20	16·758	17·626	75	3·813	4·794
25	16·094	16·798	80	3·174	3·975
30	15·479	16·003	85	2·239	3·223
35	14·582	15·109	90	0·937	2·350
40	13·540	14·056	95		1·850
45	12·020	12·833	99		0·000
50	10·922	11·519			

There was also pub. in Edin., the same year, *Principles of Life Annu. and Assu. Practically Illustrated*, by an Accountant (see again 1834).

In 1830 Mr. Robert Rankin pub., *A Familiar Treatise on Life Assu. and Annu.*, etc., etc., to which was appended orig. tables of the Prob. and Expectation of Life in the City of Bristol. [BRISTOL MORT. T.] No annu. values were deduced. In the same year Mr. J. B. Benwell pub., *New Formula in the Valuation of Annu. on Lives*, etc.

In 1832 Mr. T. R. Edmonds propounded his theory of mort. founded upon the discovery of a numerical law regulating the existence of every human being. He pub. a series of annu. tables deduced from this theory graduated in the most beautiful manner. Although derived from theoretic computation only, they differ but very slightly from many other tables in use, as will be seen by the annexed example :—

Table—4 p.c.

Age.	Years' Purchase.	Age.	Years' Purchase.
0	14·96	55	10·58
5	19·15	60	9·01
10	18·97	65	7·49
15	18·36	70	6·05
20	17·69	75	4·74
25	16·96	80	3·59
30	16·16	85	2·63
35	15·29	90	1·85
40	14·33	95	1·24
45	13·25	99	·86
50	12·02		

In the same year Mr. Charles Ellis pub., *The Law of Fire and Life Ins. and Annu., with Practical Obs.*

In 1833, by 3 & 4 William IV., c. 14, power was given to trustees and managers of savings banks to grant annu. to depositors for life, deferred, or for terms of years, such persons being not under 15 years of age, and for annu. not exceeding £20 on any one life. Tables to be used to be approved by Commissioners of Treasury. The provisions of the Act were numerous. They were amended in 1844, and are now repealed.

In the same year Mr. John Tidd Pratt pub., *The Law Relating to the Purchase of Gov. Annu.*, through the medium of the Savings Banks and Parochial Sos., comprising the stat. 3 Wm. IV., c. 14, with notes and references. Mr. W. G. Lumley also pub., *Law of Annu. and Rent-charges*. This became a standard work, worthy of its learned author.

In 1833 there was also pub., *Instructions for the Estab. of Parochial Sos. for Granting Gov. Annu.*, immediate or deferred, pursuant to 3 Wm. IV., c. 14.

In 1834 an equitable measure was passed regarding life annu., viz., that in the absence of any express stipulation against apportionment, all annu. should be apportioned so that, on the decease of an annuitant, the personal representatives should take the proportion accruing from the then last payment up to date of death. There was an exception as to annu. granted by ins. asso. This practice of apportionment had prevailed since 1738 as to annu. arising out of land (see ANNU. APPORTIONMENT ACT).

In 1834 Mr. Cleghorn pub. a small vol. on the subject of *Widows' Funds*, in which he gave such information as he had been enabled to deduce from an investigation of the Widows' Fund of the Ministers of Scotland, of the frequency of marriages and remarriages amongst that body; and other information calculated to throw light upon the probable claims on the annu. funds of that and similarly constituted asso.

In 1834 also was pub. in Edin., *Principles of Life Annu. and Assu., etc., Practically Illustrated*; showing the method of calculating the value of annu., rev., assu. on lives, policies, etc., with a large collection of useful tables, comprising the value of annu., deduced from the *Carlisle* and *Northampton* T. of Mort., with an appendix containing a comparative table of the rates of prem. demanded by all the assu. offices in Britain. By an Accountant.

In 1835 Mr. Thomas Birch Kelly pub., *A Practical Treatise on the Law of Life Annu. with the Statutes and Precedents, etc., etc.* Mr. Kelly attributes the rise of life annu. to the existence of the Usury Laws: a circumstance which he was one of the first to discover; but he was of opinion that life annu. were comparatively little known until the 18th century: an error from which further investigation might have freed him.

In the same year Mr. J. N. Mahon pub. a work on the duties and liabilities of executors and administrators under the Stamp Act; and a *Table of Annu. and their Values*.

In 1835 Mr. Charles Ansell's *Treatise on Friendly Sos.* was pub., and therein was contained a Mort. T. formed from the experience of F. Sos. for the ages 13 to 70 inclusive; and from the *Northampton* T. for the ages above 70. From this T. annu. values were given at the following rates of int.: 3, 3½, 3¾, 4, and 5 p.c., and extended to 4 decimal places. We give an abstract of the T. at 3 rates:

Age.	3 p.c.		4 p.c.		5 p.c.	Age.	3 p.c.		4 p.c.		5 p.c.
13	21.9258	...	18.5032	...	15.9099	55	11.3821	...	10.4099	...	9.5697
15	21.5146	...	18.2160	...	15.7028	60	9.8583	...	9.1142	...	8.4600
20	20.4602	...	17.4704	...	15.1598	65	8.3069	...	7.7638	...	7.2781
25	19.3530	...	16.6713	...	14.5679	70	6.7342	...	6.3619	...	6.023
30	18.1823	...	15.8069	...	13.9152	75	5.1997	...	4.9626	...	4.744
35	16.9517	...	14.8778	...	13.2002	80	3.7815	...	3.6439	...	3.515
40	15.6673	...	13.8864	...	12.4226	85	2.6202	...	2.5436	...	2.471
45	14.3214	...	12.8236	...	11.5721	90	1.7948	...	1.7582	...	1.723
50	12.8860	...	11.6600	...	10.6184	95	.2427	...	.2404	...	.238

It was in 1836 that the *Independent West Middlesex* scheme was concocted. Its hist., which is very remarkable, will be given pretty fully under its alphabetical title. The chief feature was the granting of annu. on terms which had not been heard of in modern times. They were indeed as much as 30 p.c. lower than the prices ordinarily charged. Thus a person aged 30 might secure [the promise of an] annu. of £80 for £1000 down. A writer in the *Quarterly Review* pointed out that a person securing such an annu. might insure his life so as to secure a return of his cap., and at the same time enjoy a handsome income. Large sums of money were obtained from the British public before the bubble burst.

In the appendix of official documents attached to the 3rd ann. Report of the Poor Law Commissioners (1837), we find the following in a letter addressed by the Sec. to the Boards of Guardians of Gt. Brit.:

But the Commissioners trust that you will, each in his own neighbourhood, do all in your power to promote the formation of such habits of forethought, of frugality, and self-dependence, as will keep them from falling back into pauperism, by aiding the estab. of sick-clubs, savings banks, and annu. sos.; and by inculcating on your labourers and servants the importance of thus guarding against loss of work, sickness, and old age.

Again, "The attention of the labouring classes should be directed to the annu. sos. sanctioned by the Gov., whereby they may obtain support in old age or infirmity."

In 1837 Mr. Alex. McKean pub. *Exposition of the Practical Life Tables*, with a digest of the most approved rules and formulæ (illustrated by numerous examples), for the solution of all cases occurring in the actual daily bus. of life assu., annu., revs., etc., etc.

In 1839 Mr. Peter Hardy pub. *The Doctrine of Simple and Compound Int., Annu., and Revs. Analytically and Practically Explained, with New and Extensive Tables*. The work is clearly and comprehensively written.

During the year 1840-1 there was pub. by the So. for the Diffusion of Useful Knowledge, the well-known work of Mr. David Jones: *On the Value of Annu. and Rev. Payments, with numerous Tables*. These comprise annu. and ins. for single and for two joint lives and survivorships severally, according to the *Northampton* and *Carlisle* Tables of Mort., and at different rates of int.; and are generally and widely known as *Jones' Tables*. The author says in the preface:

The numerous transactions which take place connected with the sale of annu. and rev. render a knowledge of the principles on which their values are calculated extremely desirable. This treatise is intended to give the student an opportunity of acquiring a knowledge by no means superficial of the method of calculating annu. and rev., whether dependent on a fixed number of years, or the uncertain tenure of human life. The first part refers to annu. and reversions not dependent on life. . . . The 2nd part contains the method of finding the values of annu. and rev. dependent on the existence of one or more lives. . . . A variety of tables will be found at the end of the 1st and 2nd parts. In the part which treats of life contin. resort has been had to Mr. Griffith Davies' method of constructing tables of the values of annu. pub. by him in a small tract in 1825; and a variety of formulæ have been deduced therefrom of considerable utility in working numerous cases connected with life annu. and assu.

It affords the author great pleasure to acknowledge here the liberality of Messrs. Davies and Milne in giving permission to use their respective works to assist in the objects of this pub. From Mr. Milne's work have been taken the values of annu. by the Carlisle table for single lives, and at 5 and 6 p.c. for joint lives. Mr. Davies' work has furnished the rates of prem. for two lives.

These vols. are well known, and we need not pause to dwell further upon their contents.

In 1841 Mr. Thomas H. Millar pub. *A Practical Intro. to Life and Fire Assu.; showing the Method of Calculating the Value of Annu., Revs., Assu. Pals., Bons., etc.*, with numerous useful Tables, etc., etc. And in the same year there appeared in *Chambers' Edin. Journal* a paper entitled *Cautions respecting L. Assu. and Annu.*

In 1842 Mr. J. C. Hudson, of the Legacy Duty Office, Lond., pub. *Tables for Valuing Annu. on Single Lives*.

The year 1843 affords another land-mark in the hist. of L. annu.—again a double one. In this year were pub. (1.) The EXPERIENCE T., deduced from the mort. of 17 L. Offices, who contributed their entire mort. experience for obs.—sometimes called the *Actuaries T.*, at others the *Actuaries Experience*, but which we propose in these pages to call EXPERIENCE T. No. 1. (2.) The 5th Ann. Report of the Registrar-General containing the ENGLISH MORT. T. No. 1, as compiled by Dr. Farr from the general mort. of the kingdom.

As we shall give a full hist. of each of these T. under its proper alphabetical head, we need not dwell upon them here: the less so, as in neither case were any money values deduced from these T. pub. in connexion with them.

The Reg.-Gen. in his Report, referring to the *English T.* and its prob. uses, said:

The sale of life annu. has been a frequent financial resource in recent times, and it possesses one advantage over other methods of raising money by involving the principle of extinction, and by spreading the repayment over the generations for whose advantage the debt is contracted. A series of life tables for the whole and for different parts of the pop., as well as a more comprehensive knowledge of the subject, will prevent the possibility of a recurrence of the frequent heavy losses which the Treasury has sustained in these transactions.

Again:

To what extent and under what conditions a national life table should be employed in granting annu. or assu. will be a matter for further consideration. The facts which follow seem to show that different life tables should be employed in selling annu., and adjusting the prem. of assu. to meet different degrees of contingency.

Mr. Jenkin Jones in this same year pub. a series of tables of annu. and assu. calculated from the *new rate of mort.*, viz., *Experience T. No. 1*, with examples. This is the only set of actuarial tables which has been deduced from the EXPERIENCE MORT. TABLE No. 1. The annexed is an abstract of the Annu. T. :—

In 1843 Mr. Wm. Newmarch pub. *Legacy Duty and Annu. Tables*.

In 1844 was pub. the 6th R. of the Reg.-Gen.; and therein was contained a Table of Annu. Values, deduced from the *English T. No. 1*, the sexes being distinguished. We give only an abstract of the T., as in other cases (see next page):

Table—4 p.c.

Age.	Years' Purchase.	Age.	Years' Purchase.
10	19'45	60	9'41
15	18'99	65	7'83
20	18'45	70	6'35
25	17'80	75	4'91
30	17'04	80	3'66
35	16'14	85	2'54
40	15'09	90	1'48
45	13'85	95	'58
50	12'47	98	'24
55	10'97		

Table—3 p.c.

Age.	Years' Purchase.	Years' Purchase.	Age.	Years' Purchase.	Years' Purchase.
	Males.	Females.		Males.	Females.
Birth.	18·2167	18·9302	50	13·7365	14·2924
5	23·3301	23·4195	55	11·9104	12·4600
10	23·0333	23·1190	60	10·0598	10·5657
15	22·0901	22·2096	65	8·2908	8·7318
20	21·1765	21·3846	70	6·6516	7·0153
25	20·1947	20·4892	75	5·1839	5·4657
30	19·1347	19·5101	80	3·9203	4·1253
35	17·9833	18·4295	85	2·8776	3·0181
40	16·7209	17·2236	90	2·0519	2·1434
45	15·3192	15·8597			

The preceding table must be read in the light of the following explanation :

By the English Life Table (No. 1), the present value of a life annu. of £1 at the age of 21 is £20 19s. 9d. on the life of a male; £21 4s. 3d. on the life of a female. The present value of an annu. of £1000 a year on the life of a man would be 1000 times £20 19s. 9d., or nearly £20,986; and in the same way the value of an annu. of £10, £20, £35, or any other number of pounds, may be found. £100 will purchase an annu. of £4 15s. 4d. on the life of a man aged 21, and £4 14s. 3d. on the life of a woman at that age. £1000, which is 10 times £100, will purchase an annu. of 10 times the amount, or £47 13s. on the life of a man, and £47 3s. on the life of a woman. The parties who granted annu. at these rates would gain nothing, as the values in the tables are the nett values: they might lose if the lives were well selected. Upon these accounts a certain arbitrary per-centage must be put on the "present values," and taken off the "annuities."

In this year also, by 7 & 8 Victoria, c. 83, the Act of 1833, for enabling trustees of Savings Banks to grant annu., was amended to the extent that an annu. of £30 (instead of £20) might be granted upon any one life. Husband and wife might each have an annu. This, and the Act of 1833, were repealed in 1853.

Up to 1850 the annu. granted under the two Acts just named, were 5648, and of these 3385, or three-fifths of the whole number, came in after 1844.

In 1845 Dr. Farr pub., in 8th Report of R. G., what he termed the *New Northampton Table*. It was based upon the same data as Dr. Price employed in the orig. table; but that data was "corrected" in the light of the more exact information we now possess as to the circumstances of the pop. of Northampton at the period embraced in the registers upon which Dr. Price relied; and it therefore purports to be not only a new but a true Table of the Mort. of Northampton. It is instructive to note the annu. values deduced from this new and true table as contrasted with that which came to be so extensively employed for the purposes of annuity valuation at a former period.

Under the head of NORTHAMPTON TABLE (NEW), more extended and complete comparisons will be given.

In 1846 Mr. Charles Rann Kennedy, Barrister-at-Law, pub. *A Treatise on Annu.* In the same year Mr. Edward Scurry pub. *Life Assu. and Annu. Tables*.

In 1847 Mr. W. E. Hillman pub. a little book on the *Theory and Practice of Assu.*, and therein he suggested, that as it was shown that the duration of life was affected by various diseases, whether persons suffering from such diseases should not have the benefit of the consequent reduced value of annu. on their lives. The subject will be further discussed under DISEASED LIVES, INS. OF.

Mr. Charles Ansell said before a House of Lords Committee in 1848 that most of the ins. offices had discontinued granting annu. at all: they had been found unprofitable. Many of the offices referred parties to the Gov. Mr. Finlaison said before the same Committee that there was nearly *one million* p.a. paid by the National Debt Office for annu.; but he thought the number of annuitants had reached its maximum—it had been going on for 40 years—the old ones died off about as fast as the new ones came on.

There are various sos. regis. under the Friendly Sos. Acts which grant annu., and which are not popularly known as annu. sos. Thus in the returns made by Friendly Sos. for the five years ending 31st Dec., 1850, there were included as being in the City of Lond. 6 sos., the oldest being founded in 1835, having an aggregate of 10,876 members, (the members of the 2nd largest of the 6 were not returned,) and total assets of £717,441 14s.; while in other parts of Lond. 9 other sos. were returned, being, however, nearly all small ones.

In 1850 Mr. Thomas Weddle contributed to the *Phil. Mag.* a paper *On Annu. and Assu. on Successive Lives*. In vol. ii. of *Assu. Mag.*, Mr. Peter Gray says, "The subject is treated with that gentleman's usual ability and elegance."

True Table. 3 p.c. Dr. Price's T. 3 p.c.

Age.	Years' Purchase.	Years' Purchase.
0	17·08	12·27
10	23·39	20·66
20	21·41	18·63
30	19·08	16·92
40	16·29	14·84
50	13·05	12·43
60	9·15	9·77
70	6·34	6·73
80	4·25	3·78
90	1·28	1·79
96	·00	·00

In the same year Mr. Samuel Brown read before the Inst. of Act. a paper *On the General Method of Approximation to the Values of Annu. and Assu. for long terms of years, depending on one or two Lives*. The paper is one of considerable interest, but of too scientific a character to be quoted in these pages. It will be found in *Assu. Mag. i.*, p. 20.

In the same vol. will be found a paper by the late Mr. Peter Hardy: *On the Values of Annu., which are to pay certain given Rates of Int. on the Purchase-money during the whole term of their continuance, and to replace their Orig. Values, on their expiration at certain other given Rates*. The writer says:

Notwithstanding the very large amount of leasehold property which in the course of every year is bought and sold in this country, and notwithstanding the extensive transactions—of almost hourly occurrence—in the public market, in Gov. and other temporary annu., the subject of the rate of int. which any given purchase will yield the buyer is very imperfectly understood, even by the most deeply interested in the inquiry, unless they happen to be at the same time well versed in actuarial computations.

It is not unfrequently imagined by a buyer, that if he purchase a leasehold property or a temporary annu. at a price corresponding with the value of an annu. at a given rate of int. (say 5 p.c.), he has made a purchase which will pay him 5 p.c., or which, in other words, will enable him to spend 5 p.c. p.a. on his outlay, and at the same time replace his cap. undiminished at the expiration of the term. This is a grave error, and very frequently leads to serious inconvenience. If a purchaser buys an annu. for a term of years, according to a 5 p.c. table, it is absolutely essential that the surplus of the annu. over and above the int. on the purchase-money should be ann. reinvested in some fund which will also yield a clear 5 p.c.; otherwise, the buyer's expectation to replace his cap. at the expiration of the term will not be realized.

This proposition is then fairly demonstrated; and a TABLE is furnished showing the present value of an annu. of £1 p.a. for a given number of years certain, supposing the purchaser thereof to take out of the annu. 5 p.c., 6 p.c., or 7 p.c. p.a., as an available int. on his purchase-money or cap. advanced, while he is only enabled to re-invest the surplus of the annu. beyond the available int. so as to make 3 p.c., 3½ p.c., 4 p.c., and 5 p.c. thereof.

In the same vol. will be found a paper compiled from materials supplied by Mr. W. T. Thomson: *Mort. amongst Lives selected at the ages 75 to 81 for Gov. Annu.* We have already referred to this subject in the present art. under date 1829. We shall speak of it more at large under *Gov. Annuitants*.

In the same vol. will be found some important correspondence on points involved in the preceding articles.

In 1851 there was pub., as the joint production of Mr. Peter Gray, Mr. Henry Ambrose Smith, and Mr. William Orchard: *Assu. and Annu. Tables according to the Carlisle Rate of Mort. at 3 p.c.* The editors of the *Assu. Mag.* say, "This work is of much greater value to actuaries than its mere title would seem to imply" (vol. ii. p. 194). In the same vol. there is a communication from Prof. De Morgan: *On a Method of checking Annu. Tables at different Rates of Int. by help of one another*. In this year Mr. J. H. James pub. *A Treatise on Fire and Life Assu., Annu., and Rev. Payments, etc., etc.*

In 1853 an Act, 16 & 17 Vict., c. 45, *To consolidate and amend the laws, and to grant add. facilities in relation to the purchase of Gov. annu. through the medium of Savings Banks, and to make other provisions in respect thereof*, was passed. The former Acts were repealed in order that they might be consolidated and amended. Nearly all the provisions of the former Acts were reintroduced, and there were a few new ones. The age at which life annu. might be granted was reduced to 10; the amount of annu. to be not less than £4 or more than £30; husband and wife might each have an annu. Deferred annu. might be granted upon the condition of money paid for same being returnable in event of death before annu. has commenced. Or annu. from £1 to £30 might be granted on condition of not being returnable. In cases of periodical payments, if payments were not continued, a smaller annu. might be granted. Deferred might be converted into immediate annu. Commissioners might decline to grant annu. on "sufficient grounds." The Treasury should direct what tables to be used. Quarter's payment in add. to arrears to be paid at death. Annu. not assignable, except in case of bankruptcy. Annu. to be free of taxes, and to be deemed personal estate.

Mr. J. W. Stephenson pointed out in vol. x. of *Assu. Mag.*, p. 44, that the tables pub. in conformity with this Act "were not computed in the usual way, but apparently on some principle wholly different from it." Of this he gives examples. We do not remember to have seen any explanation.

In the same year was passed the Succession Duty Act—16 & 17 Vict., c. 51—which contains elaborate schedules of the values of single and joint annu. for lives and for years, based upon *Finlaison's T.*, males, 4 p.c. This Act supersedes the Tables given in the Legacy Duty Act, 36 Geo. III., c. 52 (see SUCCESSION DUTY ACT). The difference between the two T. in the value of annu. is very remarkable. Take the case of a £100 annu. on one life:

Age.	Table, 1796.	Table, 1853.	Age.	Table, 1796.	Table, 1853.
Birth	£1032 14 0 ...	£1892 8 6	50	£1126 8 0 ...	£1242 19 6
5	1724 16 0 ...	1926 19 6	60	903 18 0 ...	972 1 0
10	1752 6 0 ...	1878 3 0	70	636 2 0 ...	677 9 0
20	1603 6 0 ...	1729 9 6	80	364 6 0 ...	381 3 0
30	1478 2 0 ...	1644 17 6	90	175 16 0 ...	133 9 0
40	1319 14 0 ...	1487 10 0	95	... ..	64 11 0

In 1853 also the 12th Ann. Report of the Reg.-Gen. was pub., and contained the ENGLISH LIFE T. No. 2. This was constructed from the deaths during the years 1838-44 ; the pop. of 1841 serving for the basis in this as in No. 1. The results of No. 2 T. were confined to *Males* only. The annu. values deduced therefrom are given at 3 rates of int. ; and are shown in the margin.

In vol. iii. of *Assu. Mag.* pub. in 1853, will be found an important practical suggestion by Mr. Peter Hardy, viz., whether the approximate value of an annu. on 3 joint lives would be more accurate, if it were obtained by means of the *curtate expectation* of two joint lives, instead of being ascertained, "as at present, by means of the *value of an annu.* on the same joint lives, at the particular rate of int. involved in the calculation." The subject, however, is so technical as to be beyond our present range. In the same vol. Mr. C. W. Merrifield, of the Privy Council Office, communicated "a method for obtaining an expression of the rate of int. in immediate annu.," and Mr. Jas. Meikle, whose name will become familiar to the reader of these pages, communicated formulæ for obtaining the value of a L. annu. at one rate of int. from the value at another given rate.

In 1854, by 17 & 18 Vict., c. 90, all the Acts relating to the inrolment of annu. were repealed, in conjunction with the repeal of the Usury Laws. It is probable that the great majority of life annu. granted during some years previous were really void for the want of inrolment. Thus, after more than three centuries of restrictions from these Usury Laws, the dealing in life annu. became free and unfettered—with this general exception, that the Courts of Equity will always interfere to set aside an "unconscionable bargain," especially if made under any aspect of fraud, or with a minor, or person mentally incapacitate.

It may seem strange at first sight, but it is unquestionably true, that since dealings in life annu. have been freed from all restrictions, the number of such transactions has very greatly diminished. But we must look to the true reason of this, and undoubtedly it is due to the repeal of the Usury Laws, which had a direct tendency to encourage the very description of transactions they were supposed to suppress. The attempt to enforce one common rate of int. for loans on every varying description of security was an act of unmitigated folly. Any person attempting to borrow on a security demanding a higher rate of int. than the legal rate, as on a life int., a leasehold estate, or a rever., was compelled to obtain the advance under cover of a life annu. And these transactions, when reasonably conducted, were not without some special advantages. To the borrower on a redeemable annu. there was the great advantage of being certain not to have the money called in by the lender, combined with the equally great convenience of being able to pay off the principal whenever he pleased. He had to consider how much he could afford to pay for these advantages. To the lender there was the advantage of securing in general a permanent investment of his money at a higher rate of int. than he could obtain by way of mortgage, and without sinking his principal, unless he chose to waive the ins., in order to increase the amount of his annu. This mode of raising money has the further advantage, that, in the various ramifications of property incident to a highly civilized state of society, it frequently affords the only means by which a parent without cap., but with a good and certain yearly income, can raise a sufficient sum to secure the advancement of his children in the world.—*Kelly*.

It was right, therefore, that all restrictions should be removed (see 1855).

In the 4th vol. of *Assu. Mag.* (1854), there appears a paper by Prof. De Morgan : *On the Demonstration of Formulæ connected with Int. and Annu.* The paper is purely scientific. In the same vol. is a paper by Holmes Ivory, then one of the Vice-Presidents of the Inst. : *On the Method of approximating to the Values of Deferred and other Life Annu., when payable Half-yearly and Quarterly.* The writer says :

The difference between the value of an immediate life annu. when payable yearly, and that of the same annu. when payable half-yearly or quarterly, has, as is well known, been variously estimated by our leading authorities. According to Dr. Price and Mr. Morgan, a fifth of a year's purchase will be generally more than a sufficient add. if the value of the annu. is desired payable half-yearly, and three-

Age.	Years' Purchase.—Males.		
	3 p.c.	4 p.c.	5 p.c.
Birth.	19.2660	16.0764	13.7504
5	24.5587	20.5340	17.5733
10	24.2042	20.3828	17.5339
15	23.2225	19.7109	17.0564
20	22.2334	19.0263	16.5663
25	21.2703	18.3612	16.0955
30	20.1943	17.5957	15.5391
35	18.9951	16.7159	14.8819
40	17.6689	15.7131	14.1120
45	16.2146	14.5798	13.2178
50	14.6272	13.3044	12.1826
55	12.8886	11.8617	10.9754
60	11.0572	10.2951	9.6260
65	9.3185	8.7738	8.2876
70	7.6837	7.3114	6.9739
75	6.2119	5.9683	5.7445
80	4.9574	4.8037	4.6608
85	3.9407	3.8460	3.7579
90	3.1492	3.0907	3.0403
95	2.5493	2.5048	2.5010
100	2.0993	1.9703	2.0520

tenths of a year's purchase if the value of the annu. is desired payable quarterly (Price, vol. i., p. 246, 6th and 7th eds.). Mr. Baily again, following Simpson, lays it down as a rule, that the value of annu. payable *yearly* must be increased nearly one-fourth of a year's purchase, in order to show the value of the same annu. payable *half-yearly*; and that they must be increased nearly three-eighths of a year's purchase in order to show the value of the same annu. payable *quarterly*" (Francis Baily, c. x., sec. 355). The same rule is also given by Mr. Milne (ch. viii., sec. 485).

The writer, while explaining the cause of the difference of these estimates, adopted Mr. Baily's rule.

By 18 & 19 Vict., c. 15, secs. 12 and 14, 1855, it is provided—in order that it may be ascertained by search what life annu. or rent-charges may have been charged upon lands by their owners—that any annu. or rent-charge granted after the passing of that Act (and not given by marriage settlement or by will) for one or more life or lives, or for any term of years, or greater estate determinable on one or more life or lives, shall not affect any lands, tenements, or hereditaments, as to purchasers, mortgagees, or creditors, until a memorandum containing the name and the usual or last known place of abode, and the title, trade or profession of the person whose estate is intended to be affected thereby, and the date of the instrument whereby the annu. or rent-charge is granted, and the amount of the annual sum to be paid, shall be left with the senior Master of the Common Pleas at Westminster, who shall forthwith enter the particulars aforesaid in a book in alphabetical order by the name of the person whose estate is intended to be affected by the annu. or rent-charge, together with the year and the day of the month when every such memorandum or minute is so left with him.

In the 5th vol. of *Assu. Mag.* (1855), there are various papers on the subject of life annu. Mr. Edwin H. Galsworthy contributed a formula, to find the amount of an annu. increasing or decreasing by a constant quantity; also to find the present value of an annu. increasing or decreasing by a constant quantity. Mr. Charles Gabriel Shaw contributed another "ingenious" formula, for a like purpose. Mr. James Meikle contributed a formula, to determine the rate of int. in a life annu., the tables of mort. and age being given. Mr. Charles Jellicoe a short formula in elucidation of these. Mr. Peter Hardy contributed an "elegant" formula for an approximate value of annu. at simple int.

In the same vol. there is a reprint from the *Trans. of the Cambridge Phil. So.* of a paper by Sir J. W. Lubbock, Bart., in 1828, *On the Calculation of Annu.*, and on some questions in the Theory of Chance; and another paper from the same source, by the same author, read 1829: *On the Comparison of Various T. of Annu.*

In 1856 Mr. Wm. Orchard pub., *Single and Ann. Prems. for Annu.* In this same year also were pub. the remaining copies of Mr. Griffith Davies' *Treatise on Annu.*, etc., (first pub. 1825,) in a more complete form than orig. Mr. William Braid made a communication to the *Assu. Mag.* (vol. vi. p. 109) *On Annu. and Assu. Tables for 3 Lives.*

In 1857 Mr. Charles M. Wallich, author of the well-known T. bearing his name, read before Sec. F. (Economic Science and Statistics) of the British Asso. a paper on *Annu. for Lives.* The author said:

The table of the values of annu. on lives, as hitherto constructed, only show the rate of int. which a purchaser may make on the money employed, and replace the cap., provided he can reinvest the surplus income, beyond the int. on the purchase-money, at the same rate of int. As it is often important to know the price which should be paid for such annu., in order that the purchaser may enjoy a certain higher rate of int. on the money invested, whilst the circumstances of the times only permit a much lower rate to be calculated upon for the future investments, I have constructed the following formula, which will show the purchase-money to be paid for an annu. under such circumstances.

Mr. Willich then furnishes the following

Table of Annu. according to the *Carlisle T. of Mort.* at 3 p.c.; also the price which should be paid for an annu. so that the purchaser may obtain 5 p.c. int. on the money invested, while the reinvestments to replace cap. are estimated to be made at only 3 p.c.:

Tables of this character are of great value in monetary transactions.

Age.	Value of Annuity at 3 p.c. Carlisle.	Value of an Annuity if 5 p.c. is to be enjoyed while the reinvestments are only to be made at 3 p.c.
20	21'695	15'130
30	19'557	14'058
40	17'142	12'765
50	14'302	11'121
60	10'491	8'671
70	7'123	6'235
80	4'365	4'014
90	2'499	2'308

In 1857 several papers appeared in the *Assu. Mag.*, vol. vii., bearing upon life annu. Thus, in a paper upon the writings of the late Dr. Thomas Young: *A Formula for expressing the Decrement of Human Life.* The subject is treated of in a highly scientific manner. Mr. Peter Hardy gave a paper: *An Investigation into the proper method of determining the amount of an Annu. forborne and improved at Int. during the existence of a given life.* Mr. Thomas Carr offered some obs. on the first-named paper. Mr. Adler supplied a formula for an approximate value of annu. at simple int.

In 1857 Mr. F. G. P. Neison published the 3rd edition of his *Contributions to Vital Statistics*; and therein is contained Tables of Mort. deduced separately from (1) Rural Districts; (2) Town Districts; (3) City Districts, of England and Wales; and then (4) the preceding three combined; and (5) combined T. of Rural, Town, and City

Districts for Scotland. Annuity values based upon these tables are given, of which the following is an abstract :

Age.	England and Wales.				Scotland.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	24·616	24·274	23·431	24·357	24·108
15	23·581	23·216	22·373	23·304	23·004
20	22·786	22·180	21·290	22·399	22·041
25	22·015	21·058	20·153	21·488	21·117
30	21·067	19·842	19·020	20·486	20·054
35	19·927	18·533	17·763	19·249	18·834
40	18·604	17·011	16·458	17·901	17·560
45	17·085	15·401	15·115	16·402	16·090
50	15·410	13·659	13·630	14·772	14·549
55	13·669	11·856	12·013	13·068	12·861
60	11·857	10·127	10·187	11·277	11·188
65	9·970	8·386	8·455	9·482	9·624
70	8·264	6·726	6·849	7·802	8·019
75	6·887	5·739	5·307	6·459	6·445
80	5·620	4·643	3·829	5·158	4·602
85	4·659	3·213	2·617	3·995	3·446
90	3·020	1·932	1·739	2·469	2·342
95	1·362	1·245	1·230	1·294	1·298
99	·329	·469	·416	·374	·374
100	...	...	...	...	...

In the orig. T. the values are carried to 5 decimal places. We have considered 3 sufficient for our purposes. [CITY LIFE.] [FRIENDLY SOS. MORT. T.] [RURAL LIFE.] [SCOTLAND.] [TOWN LIFE.]

In 1858 Mr. Wm. Curtis Otter contributed to the *Assu. Mag.* (vols. 7 and 8) two papers *On the Calculus of Finite Differences, and its application to Problems in the Doctrine of Compound Int. and certain Annu.* The papers are entirely scientific.

In 1858 Mr. J. H. James pub. *An Enquiry as to the Duration of Life in Rural Districts, etc.* In this work was contained, in a somewhat crude form, what is called the RURAL LIFE TABLE, and the annexed abstract of annu. values, 4 p.c., deduced therefrom :

The T. appears more in detail in Mr. James's *Practical Treatise on F. and L. Assu.*, etc., 1868.

In the 5 years ending 1859, there were granted to 4362 annuitants, at the National Debt Office, £262,963 of annu. The annu. therefore averaged about £60 each. They were applied for in the proportion of 1 male to 2 females. The mean age of the annuitants was about 63 years. The amount of the annu. granted in the 30 years 1829-59 was £1,967,000; and it is estimated that the substitution of the Gov. for the *Northampton T.* had in that period saved the country nearly £3,000,000 !

In 1859 Mr. Jardine Henry pub. *The Values of Annu.* on single and two joint lives, at 3, 4, 5, and 6 p.c. p.a., for every combination of age and sex, founded upon Mr. John Finlaison's Report of 1829 (see *Actuarial Tables*).

In the same year M. Fedor Thoman pub. *Theory of Compound Int. and Annu., with Logarithmic Tables.*

In 1859 the *Assu. Mag.* (vol. 8) contained various papers on life annu. Prof. De Morgan contributes one : *On the determination of the Rate of Int. of an Annu.* This paper is full of quaint learning. The same writer gives another paper : *On a Property of Mr. Gompertz's Law of Mort.*, in which he treats of the calculating an annu. on 3 joint lives. Mr. W. M. Makeham contributed a paper : *On the Law of Mort. and the construction of Annu. T.* The author says :

Most writers on the subject of life annu. have had occasion to lament the paucity of tables available for the performance of calculations involving two or more lives. The late Mr. David Jones has done much to supply this deficiency by the pub. of complete sets of tables for two lives at various rates of int. ; but beyond this it is extremely improbable that under the present system any considerable progress will be made, owing to the multiplicity of the different combinations when 3 or more lives are concerned, and the consequent magnitude of the task involved in the construction of complete sets of tables for such cases.

The chief object of the following investigation has therefore been to find a formula which should represent with sufficient accuracy the results of obs. on the law of mort. ; and which at the same time should be adapted to facilitate the construction of *complete sets* of tables of annu. involving several lives.

The writer then enters upon the necessary scientific investigation for accomplishing his purpose.

In 1860 Mr. A. G. Finlaison pub. by the authority of Parl. his *Report and Obs. on the*

Age.	Years' Purchase.
1	19·397
15	18·551
25	17·183
35	16·048
45	13·413
55	10·995
65	8·475
75	6·724
85	5·574

Mort. of the Gov. L. Annuitants, being at once a revision and continuation of the Obs. of his late father, brought down to 1854. Of the main results of this Report we shall speak at large under head of GOVERNMENT ANNUITANTS T. OF MORT. It will be useful for the purposes of comparison to introduce the following abstract here :

Age.	Expectation of Life. (Combined Obs.)		Age.	Expectation of Life. (Combined Obs.)	
	Males.	Females.		Males.	Females.
5	48.88	53.28	55	17.41	19.56
10	45.57	50.07	60	14.41	16.17
15	41.85	46.49	65	11.54	12.96
20	38.74	43.27	70	9.08	10.14
25	36.25	40.02	75	7.00	7.70
30	33.39	36.65	80	5.22	5.69
35	30.25	33.30	85	3.93	4.17
40	27.12	29.91	90	2.78	2.94
45	23.86	26.45	95	1.51	1.57
50	20.53	22.99			

The quinquennial periods fall under a different arrangement in the following T., for reasons which will be explained under GOV. ANNUITANTS.
Value of a L. Annu. at 4 p.c.

Old Observation.				New Observation.		
Age.	Males.	Females.	Difference in Year's Purchase.	Males.	Females.	Difference in Year's Purchase.
3	19.26	19.95	.69	19.29	19.89	.60
8	19.03	19.89	.86	18.97	19.75	.78
13	18.34	19.32	.98	18.29	19.24	.95
18	17.53	18.78	1.25	17.59	18.76	1.17
23	17.07	18.33	1.26	17.20	18.30	1.10
28	16.67	17.79	1.12	16.78	17.70	.92
33	16.05	17.15	1.10	16.08	17.00	.92
38	15.24	16.46	1.22	15.26	16.21	.95
43	14.26	15.65	1.39	14.29	15.25	.96
48	13.01	14.63	1.62	13.08	14.13	1.05
53	11.58	13.37	1.79	11.75	12.83	1.08
58	10.26	11.89	1.63	10.35	11.35	1.00
63	8.83	10.26	1.43	8.80	9.68	.88
68	7.33	8.55	1.22	7.23	8.00	.77
73	5.97	6.88	.91	5.82	6.39	.57
78	4.45	5.41	.96	4.46	4.88	.42
83	2.93	4.29	1.36	3.36	3.62	.26
88	1.65	2.77	1.12	2.44	2.59	.15
93	.93	1.35	.42	1.43	1.54	.11
98		.42		.31	.31	

In 1861 Mr. H. W. Porter, M.A., contributed to the *Assu. Mag.* (vol. 9, p. 277), in the form of a letter, an able review of some of the more important points considered in or suggested by Mr. Finlaison's R. We shall speak of some of these points under head of CENSUS AND POP. Mr. Peter Gray communicated some remarks upon a formula used in relation to L. Annu. And there is a reprint of a paper contributed by Prof. De Morgan to the *Phil. Mag.* in 1839 : *On the rule for finding the value of an Annu. on 3 Lives.*

In 1863 Mr. Andrew H. Turnbull pub. *Tables of Compound Int. and Annu.* : yearly, half-yearly, and quarterly payments in decimals and currency ; with rules for determining the amount of principal and int. in any payment of annu. ; and for the construction of tables showing the same.

In 1864 the ENGLISH L. T. No. 3, was pub. The variations from the preceding T. (Nos. 1 and 2) are very slight. The table is so constructed as to show the value of annu. on the life of a male, or of a female ; and on *two lives*,—namely, 2 males ; 2 females ; 1 male and 1 female, at all the various combinations of age. They are all calculated at 3 p.c. int. The following is an abstract of the T. of annu. values on single lives.

Age.	Male. Years' Purchase.		Female. Years' Purchase.	Difference.	Age.	Male. Years' Purchase.		Female. Years' Purchase.	Difference.
birth...	19.1506	...	19.8502	... .6996	25	21.0913	...	21.3120	... .2207
5	24.4367	...	24.4807	... .0440	30	20.0143	...	20.3374	... .3231
10	24.1071	...	24.1470	... .0399	35	18.8105	...	19.2539	... .4434
15	23.1052	...	23.1933	... .0881	40	17.4744	...	18.0353	... .5609
20	22.0612	...	22.2093	... .1481	45	16.0102	...	16.6576	... .6474

Age.	Male. Years' Purchase.	Female. Years' Purchase.	Difference.	Age.	Male. Years' Purchase.	Female. Years' Purchase.	Difference.
50 ...	14'4240	15'0942	... '6702	80 ...	4'9192	5'1872	... '2680
55 ...	12'7570	13'3279	... '5709	85 ...	3'9388	4'1419	... '2031
60 ...	11'0176	11'5274	... '5098	90 ...	3'1788	3'3277	... '1489
65 ...	9'2657	9'7284	... '4627	95 ...	2'6014	2'7078	... '1064
70 ...	7'6100	8'0162	... '4062	100 ...	2'1671	2'2415	... '0744
75 ...	6'1445	6'4832	... '3387				

A difference in favour of female life prevails at all ages.

Also in 1864, by 27 & 28 Vict. c. 43, was introduced Mr. Gladstone's Gov. Ins. and Annu. Scheme, which created so much alarm amongst the ins. offices before it came into operation; and has been heard of so very little since. The scheme did not really come into force until 17th of April, 1865. We consider the measure a sound and good one; calculated to be of great benefit to those for whom it was especially intended; and not likely in any important degree to interfere with the bus. of the ordinary ins. offices. The full details of the scheme will be given under GOVERNMENT INS. SCHEME. We may remark that while the *English Life T.* No. 3, is used for the life ins. branch, Mr. Finlaison's T. of 1829 continues to be used for annuities. The reasons for this have already been indicated, and will again be referred to.

In 1865 Prof. De Morgan communicated to the Inst. of Act. a paper entitled: *On a Problem in Annu., and on Arbogast's Method of Development.* The paper is printed in vol. 12 of *Assu. Mag.*, but it is purely mathematical.

In 1866 Mr. William Lewins pub. *Hist. of Savings Banks, and Post Office Annu. and Ins.*

In the U.S. life annu. are by no means a popular investment. In the year 1867, 44 of the principal ins. offices only issued in the aggregate 19 annu., involving an ann. charge of 9197 dols.; and in the four previous years, although a greater number had been granted, they were still sufficiently few to show that no interest is taken in this branch of business. The following is an abridgment of an art. upon life annu. which appears in the *Ency. Americana*:

Many such annu. are granted for public services. Of this description are the pensions granted by the Acts of the Congress of the U.S. to surviving officers and soldiers of the Army of the American Revolution. Many such are granted by every Gov., and, as these do not arise from a specific contract, and are not usually subjects of purchase [the Acts of Congress, especially, by which those of the U.S. are created, contain provisions to prevent their sale and transfer from the original grantees], their precise value is not often a subject of investigation. But life annu. are often created by contract. . . . When granted by a Gov., they are generally one mode of raising loans; when created by a contract with a private corp. or co., their object usually is to give the annuitant the use, during his life, not only of the income of his cap., but of the cap. itself. If a person, having a certain cap., and intending to spend his cap., and the income of it during his own life, and leave no part to his heirs, could know precisely how long he should live, he might loan his cap. at a certain rate during his life, and by taking every year, besides the int., a certain amount of the capital, he might secure the same annual amount for his support during his life, in such manner that he should have the same sum to spend every year and consume precisely this whole cap. during his life. But since he does not know how long he is to live, he agrees with the Gov. or any annu. office, to take the risk of the duration of his life, and to pay him a certain annu. during his life in exchange for the capital which he proposes to invest in this way. The probable duration of his life, therefore, becomes a subject of computation: and for the purpose of making this calculation, tables of longevity are made, by noting the proportions of deaths, at certain ages, in the same country or district. A table of this sort was made by Professor Wigglesworth, of Cambridge University, and pub. in the *Trans. of the American Academy*. This table is very much used in estimating the value of life-estates and annu. in the U.S.

The value of an annu. will depend, also, in some degree, upon the responsibility of the Gov. or co. agreeing to pay it. An annu. guaranteed by a pledge of real estate is worth more than one of the amount resting upon the mere promise of a gov. or private co. Accordingly, for the purpose of raising money upon better terms, that is, selling the annu. for a greater present value, some of the Gov. of Europe have occasionally pledged their domains or the income of certain taxes, to secure the payment of the annu.—*Encyclopædia Americana*.

In 1867 Mr. Sprague pub. in *Assu. Mag.* a paper *On the Value of Apportionable Annu.; or of Annuities in which a proportionate part is payable up to the day of death.* The paper is almost entirely mathematical. The author says:

In former papers I have investigated the value of an annu. on a single life, when payable half-yearly, quarterly, etc. It still remains to consider the values of annu. on the joint duration of two or more lives, or on the life of the last survivor of several lives under similar circumstances. It will, however, be more useful to consider first the increase in the value of annu. on a single life, when a proportionate part of the annu. is payable up to the day of death, instead of the annu. ceasing, as is generally assumed, with the payment that precedes the date of death. [ANNUITY APPORTIONMENT ACT.]

In 1868 Mr. Huie pub. an excellent little work on *Widows' Funds*, giving, amongst much useful information, tables of the values of annu. to the widows from first marriage of Bachelors, according to the experience of the Scottish Schoolmasters Widows' Fund, and the Scottish Ministers Widows' Fund; also values of annu. to widows from re-marriage of widowers; and values of annu. from death of widower or widow until youngest child attains 21; and values of annu. on death of a man whose wife is still living, payable if he die last, and leave a family. It is very difficult for those unfamiliar with the working of these Widows' Funds to comprehend at first sight the ramifications into which they extend. We shall speak of these in some detail under head of WIDOWS' FUNDS.

In the same year Mr. J. H. James pub. *Practical Treatise on Life and Fire Assu., Annu., and Rev. Sums, and Leases for Terms and for Lives*; illustrated by tables deduced from general and rural mort. [RURAL MORT. TABLE.]

In 1868 Mr. Makeham contributed to the *Assu. Mag.* a paper *On the Theory of Annu. certain*, and the same is pub. in vol. xiv.

The following T. shows the amount of Stock trans. and money paid to the Commissioners for the Reduction of the National Debt, for L. annu. under the Acts 10 Geo. IV. c. 24; 16 and 17 Vict. c. 45; and 27 & 28 Vict. c. 43; and the amount of the annu. granted for the same during the under-mentioned periods.

Year ending 5th January.	Stock Trans. to Commissioners.	Money paid to Commissioners.	Immediate Annu. granted.	Deferred Annu. granted.
1854	£266,886	£450,360	£60,643	£1411
1855	190,502	344,625	46,903	1028
1856	243,441	319,984	48,326	1111
1857	277,018	361,741	56,591	1300
1858	272,533 ...	323,258	54,564	1135
1859	341,418	467,234	69,416	811
1860	375,535	346,604	61,967	907
1861	271,004	398,450	59,874	1137
1862	250,571	350,007	54,557	1278
1863	278,155	390,501	58,124	644
1864	308,742	325,017	56,113	863
1865	181,144	227,758	36,846	551
1866	347,053	323,918	64,601	90
1867	222,439	268,772	43,403	16
1868	311,787	363,674	59,630	

This requires some explanation. In the first place, as the year (most foolishly) terminates on 5th Jan., the figures of necessity relate almost entirely to the preceding year, and should be so read. In the next place, the "deferred annu." have, since the passing of the 27 & 28 Vict. c. 46 (1864), been carried to a separate account.

It appears that about £1,000,000 of the public revenue is disbursed every year in the form of L. annu., and that about £600,000 on the average is ann. invested in this mode with the Gov. The eds. of the *Assu. Mag.*, reviewing the preceding figures, say:

The amount of these investments fluctuates considerably; and curiously enough, the fluctuations are a very fair index of the state of the money market at the time. Thus in the 15 years under review, it will be observed that the greatest amount of annu. was granted in 1858, the year immediately succeeding the suspension of the Bank Charter Act in Nov. 1857; and the least in 1864, a period of reckless speculation, the reaction from which is clearly discernible in the largely increased transactions of the following year:

In 1869 there was pub. the (NEW) EXPERIENCE MORT. T. deduced from the "Mort. Experience of Life Assu. Cos., collected by the Inst. of Actuaries." This, as we have already intimated, we shall call EXPERIENCE TABLE No. 2; under which title a full account of the data upon which it is constructed will be given. There were no money tables deduced from this T. pub. at this date. See 1871.

In the *Assu. Mag.* (xv. p. 95), 1869, will be found a paper by Mr. Woolhouse, *On an Improved Theory of Annu. and Assu.* It is not any part of our design to reproduce even the substance of modern papers so easily obtainable as those in the *Assu. Mag.*, although we have to note their existence for the purpose of complete chronological sequence. We may quote one passage which will give an indication of the scope of the present paper:

The new theory might appropriately be called the *continuous method*. According to the principles laid down, all moneys invested, in place of receiving yearly increments of int., are considered to be continuously growing. This is undoubtedly the only true way to assimilate our computations with actual facts, since moneys as they come to hand are invested in various securities, and at all seasons, and should therefore not be assumed to bear int. at estab. and immovable periods, but should be regarded as realizing the accumulations from the exact dates at which they are received. Also, lives, instead of being subjected to successive yearly decrements, are, in like manner, properly considered to be diminishing continuously. . . . It is no longer necessary to be dependent upon such gratuitous suppositions as that the deaths which take place during any year shall be equally distributed throughout the year. . . . The inaccuracy introduced by their adoption would be made very conspicuous were we to deal with quinquennial in lieu of ann. intervals, since no experienced calculator would for a moment tolerate the hypothesis of deaths being equally distributed throughout a quinquennial period, and yet the principle is the same for one year as for five.

In the same vol. p. 126, will be found a paper by Mr. Sprague, M.A. *On the value of Reversionary Annu. payable half-yearly, quarterly, etc., according to the conditions which prevail in practice.* This is purely a scientific paper, the subject being reasoned out with all that mathematical ability for which its learned author is so justly renowned.

In this same year, 1869, there came before the Law Courts a very curious, and perhaps unique case, arising out of the affairs of the *Philomarian* (Annuity) So., which had been founded in Lond. in 1765, and now found itself with a considerable surplus beyond its requirements! We shall give details under hist. of that So.

The Life Assu. Cos. Act, 1870 (sec. 8), requires a periodical statement of life and annuity business transacted to be made. See ACCOUNTS.

In 1871 Tables of Money Values, deduced from EXPERIENCE T. No. 2, were completed under the supervision of the Inst. of Actuaries. The vol. at the moment of our writing is not ready for pub.; but through the courtesy of the President and Council of the Institute, we are enabled to furnish our readers with the following abstract of the T. of Annu. Values :

Age.	Years' Purchase.		Age.	Years' Purchase.	
	3 p.c.	4 p.c.		3 p.c.	4 p.c.
10 ...	24'148	20'077	55 ...	12'094	11'043
15 ...	23'158	19'417	60 ...	10'236	9'459
20 ...	22'043	18'644	65 ...	8'418	7'870
25 ...	21'038	17'961	70 ...	6'657	6'293
30 ...	19'867	17'131	75 ...	5'061	4'833
35 ..	18'587	16'197	80 ...	3'742	3'604
40 ...	17'176	15'135	85 ...	2'739	2'658
45 ...	15'594	13'301	90 ...	1'740	1'704
50 ...	13'896	12'536	95 ...	'415	'411

[The close of this lengthy art. on L. Annu.—prob. the most wearisome to the general reader of any which may appear in our pages ; as it has certainly been the most laborious to the writer—seems a fitting opportunity to state two things :—1. That we shall be much obliged to our readers for pointing out omissions—and the more so, if accompanied with references to the materials omitted. 2. That we are open to suggestions for the practical treatment of these historical articles, which must occur again as we reach FIRE INS., LIFE INS., MARINE INS., MORT. TABLES, etc.]

ANNUITIES ON LIVES: PRACTICE.—In the practice of granting annu. on L. considerations arise which have scarcely been glanced at in our historical art. ; a few of these must be briefly noticed.

Some few years since, and nearly all life offices granted such annu. Of later years the practice has been falling into disuse by some of the leading offices. We believe the *Economic*, *National Provident*, and *Norwich Union* have discontinued granting such annu., prob. many others. The last-named office found that it had made a considerable loss by its life annu.

It forms not unfrequently, and we are disposed to think not unwisely, an element of finance on the part of a young L. office to grant L. annu. It seems a ready way of acquiring a portion at least of the cap. required for foundation expenses : but care must of course be taken that this advantage be not purchased too dearly. A reckless system of granting L. annu. would pull down any office, young or old.

An office granting only a small number of L. annu. is always open to the difficulty of not having sufficient lives at risk to secure it a proper average. On the other hand, a young office is not very likely to have annu. lives selected against it, as a matter of speculation.

The rate of int. assumed in the granting of annu. is unquestionably one of the most important considerations. This may be shown by one short example. The value of an annu. of £1 on a life aged 50 is given as follows by 4 Mort. T. at 4 rates of int.

	3 p.c.			4 p.c.			5 p.c.			6 p.c.		
Northampton	£12	8	9	£11	5	4	£10	5	5	£9	8	4
Equitable Experience	£14	0	5	£12	12	0	£11	8	0	£10	7	9
Experience (No. 1)...	£13	16	5	£12	9	5	£11	6	6	£10	7	0
Carlisle	£14	6	0	£12	17	5	£11	13	2	£10	12	7

These differences existing in the value of £1 annu. would reach a very serious magnitude when large sums are dealt with ; as for instance £100's and £1000's. The entire question of the bearing of int. on the values of L. contin. will be considered under INT. OF MONEY. Prof. De Morgan considered that certainly not more than 3 p.c. should be assumed in ordinary annu. transactions in Gt. Brit.—*Essay on Prob.*

A review of the preceding figures also shows that the MORT. T. to be selected as the base for ann. calculations is a matter of very considerable importance—less so no doubt since the *Northampton* Table has fallen entirely into disuse for such purposes. It has been remarked, and with partial truth, that it would not matter upon what mortality table, either life insurance or annuity rates were based, provided every person who insured his life, sunk in a life annu. with the same office a sum equal to that ins. under his L. pol. But in practice no such equalizing circumstances do or can exist. On the contrary, selection is very commonly made against the office in both directions. Lives below the standard of health seek to insure—lives above the ordinary standard select L. annu. as a profitable investment. In consequence of this state of things, it is regarded only as a matter of prudence that the two branches of bus. should be conducted upon the basis of distinct mort. T.—the Gov. Annuitants T. being in such cases usually selected for the purpose of annu.

An attempt was made some years since, by the late W. E. Hillman, to graduate a system of L. annu. to the varying effect of different diseases upon the human system. We shall refer to this more at large under DISEASED LIVES, INS. OF. We desire to express

here our conviction that, whatever theory may *seem* to say to the contrary, in the practice of granting L. annu., the greatest possible care must be exercised at all times to prevent the judgment from being swayed into granting annu. on easier terms, *because of any representation that the life is not up to the full standard of health*. There have been many remarkable cases of clever deception in this respect. The ailments vanish with a marvellous facility soon after the annu. pol. is obtained.

In the next place it seems desirable in all dealings in L. annu. to regard the difference in value between male and female lives. Prof. De Morgan pointed this out as far back as 1838. He said :

The distinction of male and female life becomes of importance in the granting of annu. The ins. offices have not as yet, except, I believe, in one or two instances, begun to recognize the distinction, which is of the less consequence, since with respect to the office it is keeping on the safe side : and with respect to the public, very few female lives are ins. *But the exact reverse takes place with respect to annu. It would be insecure to grant them on the same terms as to males : and a very large proportion of the whole number of annu. is of the female sex.*

It was this same writer, we believe, who first pointed out the essential differences between a life ins. office and an annu. association. The management of an annu. asso. (he said) is somewhat more easy than that of an ins. estab. ; and the maxims of security of the former are of course the direct reverse of those of the latter, as far as any considerations of mort. are concerned. *Tables must be assumed of higher than the real vitality, and a rate of int. somewhat below, at least not above, that which can actually be obtained.*

We must now glance very briefly at a few of the legal conditions surrounding annu.

An annu. can be granted only *by deed*. A mere agreement to pay an annu., whether by word of mouth, or in writing not under seal, gives no right to bring an action for the arrears (*Nield v. Smith*, and *In re Locke*). Salaries, pensions, and the like, though ann. payable, are not annu. in the legal sense, unless granted in the regular way.—*Kennedy*.

An annu., properly so called, is merely *personal* property, and not at all connected with realty, although it is frequently ranged under incorporeal hereditaments, issuing out of land, and even the Legislature treats it sometimes as a rent-charge ; from which, however, it materially differs (see 3 & 4 Wm. IV., c. 27, s. 21). [RENT-CHARGE].

An annu. for life or years is not redeemable in the same manner as a PERPETUAL ANNU. But it may be agreed by the parties to the contract that it shall be redeemable on certain terms ; or it may afterwards be redeemed by consent of both parties. Equity will decree a redemption on the ground of fraud or gross inadequacy. [REDEEMABLE ANNU.]

The annuitant possesses a mere right to receive certain periodical payments (annual, half-yearly, quarterly, or otherwise, as the case may be). Such a right is in the nature of what the law calls a *chose* in action, that is, a thing which can only be reduced into possession by means of an action. A *chose* in action is, by the general rule of Common Law, not assignable ; but to this rule annu. in fee always formed an exception (*Viner's Abridgment*, 11,515), on the ground that no property is by the law of England allowed to continue perpetually inalienable. Other annu., however, are not assignable at Common Law, although the assignment of them, like that of any other *chose* in action, will be protected by Courts of Equity. Therefore, upon any such assignment having been made, if action is to be brought in a Court of Common Law, the person to whom the annu. is assigned must use the name of the orig. annuitant ; but, if it be necessary for him to apply to the Court of Chancery, his title under the assignment is there recognized, so that he may sue in his own name—*Kennedy*. The assignment must be by deed.

An annu. may be bequeathed. It may be either created by, or, if already existing, may be transmitted by Will. A created annu. is a general legacy, and will abate with the other legacies on a deficiency of assets.

The most expeditious remedy to recover the arrears of a personal annu. is an action of debt upon the deed. An action of covenant will lie ; and if judgment by default be recovered, a reference to the Master to compute the arrears is obtained. Where there is a bond, an action for its penalty may be brought, and a *scire facias* issued upon the judgment as the arrears become due from time to time.

As to the *Bankruptcy* of the grantor of an annu., see 24 & 25 Vict., c. 134 (1861), secs. 175 and 176. As to his *Insolvency*, see 1 & 2 Vict., c. 110, sec. 80 ; and 32 & 33 Vict., c. 83, sec. 20 (1855).

Upon the purchase of an annu. from an ins. co., the payment of the purchase-money after the approval of the proposal by the board would be conclusive in support of the contract, notwithstanding the death of the annuitant an hour after, and before any annuity policy had been executed ; in accordance with the general rule that in Equity what is agreed to be done is considered as actually done. The death can form no objection to the specific performance of the contract. The purchaser agrees to buy an interest of uncertain duration, and he cannot complain that the contingency is unfavourable to him.

—*Sir Edward Sugden*.

ANNUITIES ON LIVES, VALUE OF.—Various inexperienced writers on annu. have fallen into the error of supposing that the *value of a L. annu. is the same with the value of an annu. certain, for as many years as is equal to the expectation of any given life*. Mr.

Weyman Lee, who wrote in 1737 and again in 1751, was the main disciple of this school ; but the error is fallen into even at the present day.

Dr. Price, in a note to his *Essay* read before the Royal Society in 1769, said hereon :

Were this true, an annu. on a life supposed to be exposed to such danger in a particular year as to create an equal chance, whether it will not fail that year, would, at the beginning of the year, be worth *nothing*, tho' supposed to be sure of continuing for ever if it escaped that danger : nor in general would the values of annu. on a set of lives be at all affected by any alterations in the rate of mort. among them, provided these alterations were such as did not affect the period during which they had an equal chance of existing.

The Baron Maseres, in 1783, speaking of the method propounded by Mr. Weyman Lee, says :

It is exceedingly erroneous, and gives the values of life annu. throughout the greatest part of human life, much greater than they should be. In the younger ages of life, the difference of the erroneous value from the true one amounts to about 3 years' purchase, yet the principle upon which Mr. Lee grounds this method has something in it plausible at first sight, and is apt to mislead the understanding with an appearance of truth and simplicity, unless it be examined with a great degree of attention.

The reason why the proposition is not true was explained in a clear and popular manner some few years since by Mr. F. A. C. Hare, of Manchester.

ANNUITY.—An annuity (as distinguished from a *L. annu.*) is a payment made ann. for a term of years ; and the chief problem relating to it is to determine its present worth, that is, the sum a person ought to pay immediately to another upon condition of receiving from the latter a certain sum ann. for a given time. In resolving this problem, it is supposed that the buyer improves his annu. from the time he receives it, and the seller the purchase-money, in a certain manner during the continuance of the annu., so that at the end of the time the amount of each may be the same. There may be various suppositions as to the way in which the annu. and its purchase-money may be improved ; but the only one commonly applied to practice is the highest improvement possible of both, viz., by *Compound Int.* As the taking of compound int. is, however, prohibited by law, the realizing of this supposed improvement requires punctual payment of int., *and therefore the int. in such calculations is generally made low.*

The words *Annu.* and Rent-charge are frequently used as convertible terms : but in reality they are not so.

ANNUITY ACT.—In 1777 the 17 Geo. III. c. 26, commonly called "The Annuity Act," was passed. Its intention was to suppress gambling and dishonest dealings in *L. annu.*, and it appears to have been eventually successful. The subject is referred to in our Hist. of *Annu.* under this date, and the details of the Act are also given there.

ANNUITY APPORTIONMENT ACTS.—In 1738, by the 11 Geo. II. c. 19, annuities arising out of rents and profits from real estate were to be so apportioned that the representatives of the annuitant received the due proportion from the last preceding payment up to the death of such annuitant ; but the Act did not extend to annuities arising from other sources ; and under the general law, rents, annuities, etc., were not apportionable.

In 1834, by 4 & 5 Wm. IV. c. 22, it was enacted that all rents, annuities, and other payments coming due at fixed periods be apportioned, subject to all just deductions ; and remedies were provided at Law and in Equity for recovering the same. The Act will not apply where a stipulation has been made that there shall be no apportionment ; nor does it apply to life premiums falling due annually or otherwise.

Sec. 2. All annu. made payable or coming due at fixed periods under any instrument executed after 16th June, 1834, shall be apportioned so that the annuitant's executors or assigns shall be entitled to a proportion of such annu. according to the time which shall have elapsed from the last payment, including the day of the death.

Sec. 3. The Act is not to apply to ann. sums payable in pol. of assu. of any description.

In 1870, by 33 & 34 Vict. c. 35, it was enacted :

Sec. 2. Annuities are to be accruing from day to day, and to be apportionable accordingly.

Sec. 6. Nothing in the Act contained shall render apportionable any annu. sums made payable in pol. of assu. of any description.

ANNUITY BOND.—The deed or legal instrument by which an annuity is sometimes secured to an annuitant. [ANNUITY POLICY.]

ANNUITY BUILDING AND GENERAL ASSU. CO.—A project under this title was prov. regis. in April, 1855. It never proceeded beyond this stage. Mr. Joseph Bentley, well known in the ins. world, was the promoter.

ANNUITY CERTAIN.—An annuity certain is one for a given term of years, not dependent upon any life or event. A perpetual annu. is sometimes called an annu. certain.

ANNUITY CO. FOR PURCHASING OF GOVERNMENT SECURITIES, ETC., founded 1720. See BAKER'S ANNUITIES.

ANNUITY POLICIES, STAMP DUTY UPON.—10s. for each £100 of the purchase-money. For sums below £100 the following is the scale : Not exceeding £5, 6d. ; exceeding £5 and not exceeding £10, 1s. ; £10 and not exceeding £15, 1s. 6d. ; £15 and not exceeding £20, 2s. ; £20 and not exceeding £25, 2s. 6d. ; £25 and not exceeding £50, 5s. ; £50 and not exceeding £75, 7s. 6d. ; £75 and not exceeding £100, 10s.

The Act fixing the above is the last general Stamp Act, 33 & 34 Vict. c. 97 (1870). The following sec. governs the scale :

75. Where upon the sale of any annu. or other right not before in existence, such annu. or other

right is not created by actual grant or conveyance, but is only secured by bond, warrant of attorney, covenant, contract, or otherwise, the bond or other instrument, or some one of such instruments, if there be more than one, is to be charged with the same duty as an actual grant or conveyance, and is for all the purposes of this Act to be deemed an instrument of conveyance on sale.

The 3rd portion of sec. 72 bears upon life annu. not granted under pol. :

Where the consideration, or any part of the consideration, for a conveyance on sale consists of money payable periodically during any life or lives, such conveyance is to be charged in respect of such consideration *ad valorem* duty on the amount which will or may, according to the terms of sale, be payable during the period of 12 years after the day of the date of such instrument.

ANNUITY POLICY.—Annu. like other pol. are various in form, as they are designed to cover various contingencies. An ordinary policy for an annu. during the life of one person granted by an ins. office is generally after the following form :

Whereas . . . of . . . etc., is desirous, and hath proposed to effect an assu. with the . . . Ins. Co. for an annu. of £ . . . to be payable to him, or his assigns, during his life, and hath caused to be delivered into the office of the said Co. a declaration or statement in writing, bearing date the . . . day of . . . 187 , signed by him, whereby it is declared amongst other things that his age did not at his last birthday exceed . . . years; which declaration or statement he hath agreed shall be the basis of the contract between himself and the said Co. And whereas the said . . . hath paid to the Directors of the said Co. the sum of £ . . . as the prem. or consideration for the proposed assu. of the said annu. Now this indenture witnesseth, that the cap. stock, funds and property of the said Co., shall be subject and liable, according and subject to the provisions of the D. of Sett. of the said Co., to pay to the said . . . or his assigns, from the . . . day of . . . henceforward during his life, an annu. or clear yearly sum of £ . . . , to be payable at the times and in the manner mentioned at the back of this pol. Provided nevertheless that in case any untrue or fraudulent allegation is contained in the declaration or statement, so as aforesaid delivered into the office of the said Co., or if any fact which ought to be stated therein has been omitted therefrom, then this pol. of assu. shall be void. Provided also that in case of this pol., or the moneys hereby assu. to be paid, becoming the subject of any trust whatsoever, the receipt of the trustee for the time being of the said pol. or moneys may be accepted as an effectual discharge to the said Co. for any moneys payable by the Co. under such pol., without the Co. being bound to see to the application of such moneys, or answerable or accountable for the misapplication or non-application thereof. In witness whereof, the Common Seal of the said Co., etc.

In the case of asso. not formed under the Lim. Liability Law, or the F. Sos. Acts, the usual "Limitation Clause" adopted in its other contracts would be inserted in its proper place in the pol. This is a matter of great importance.

It has always appeared to us desirable to embody a covenant that reasonable proof shall be afforded at any and all times of the continued existence of the annuitant. Also that proof of "identity" may be called for when deemed necessary by the Co.

ANNUITY SOCIETY OF ROMSEY, HANTS.—This So. was estab. in or before 1770. In that year its principal articles were printed: and from these it is clear that the So. was founded upon the model of some of those existing in Lond. at that date. The So. was estab. at the Dolphin Inn, in Romsey; and its constitution very much resembles that of the local friendly sos. of a later date. We have spoken of this So. more at large in our hist. of ANNUITIES ON LIVES.

ANNUITY TABLES.—Annu. T. are the foundation on which all the subsequent monetary T. for life ins. calculations are built. Their peculiarities must therefore affect the whole structure. This was forcibly pointed out by Neison in his *Contributions*, etc., 1857. It is in view of this fact that we have endeavoured to furnish means of comparison of the results of the various annu. T. already pub., in our hist. of life annu. And further, in this view we shall be careful to give, in our hist. of each individual mort. T. from which annu. values have been deduced, an exact account of the materials upon which the same was based. By such means alone can the student obtain a complete mastery of the subject. Our art. on MORT. T. will contain much add. information. All we can do in the present art. is to indicate the nature of the lessons to be drawn from the facts hereafter to be supplied.

Speaking of the Tables of Halley, Simpson, Dodson, Dupré, St. Cyran, the Northampton Table, and Duvillard's—all without distinction of sex—Mr. Milne points out that these were all deduced from B. of mort. alone, and in places where the pop. was variable, and the numbers of the people at the different ages were not ascertained. Therefore, notwithstanding the attempts to supply their defects which were made by the eminent mathematicians who constructed them, *none of them represented truly the laws of mort. in the places where the respective obs. were made. Consequently the values of annu. derived from them cannot be correct; but will in general be considerably less than the truth, even for the general average of the whole pop. of the places in which the obs. were made.*

Mr. Milne offers the following additional and important obs. on the same tables :

But those values of annu. are also objectionable on this ground—that the places they were intended for, and understood to be adapted to, were generally populous towns, containing a large proportion of poor persons dependent upon their daily labour for their supply of food from day to day, often with little forethought, and many of them engaged in unwholesome employments, amongst whom great distress is often endured by the comparatively high prices of bread and potatoes, or the low rate of wages: when the scanty food they are reduced to produces typhus fever, and sometimes the dysentery among them, which carry them off in great numbers. And these visitations were much more common at the times when the obs. were made from which most of these tables were constructed than they have been of late years.

None of those causes of mort. operate sensibly upon the general average of those persons upon whose lives leases, or annu., and rev. or assu. depend: they being generally in the higher and middle classes. Neither do they produce much effect among the more deserving persons in the lower classes,

such as the members of friendly sos., and others who are both industrious and frugal enough to live within their incomes; nor indeed upon any who are in comfortable circumstances.

Hence it follows that the values of life annu., and consequently those of any pecuniary interests dependent upon the continuance or the failure of human life, cannot be correctly determined from obs. made on a whole pop. similar to those of the places these tables were constructed from. But this was not distinctly seen till of late years, and appears to be very imperfectly understood at present (1830), even by some who might be expected to possess correct information on the subject. The tables constructed by Dr. Price, both from the Swedish obs., and those made by Dr. Haygarth at Chester, throw valuable light on this subject.

It is to be remarked that while the English compilers of annu. T. have nearly always arranged them in the form of showing the number of years' purchase that the annuities are worth—a method having many advantages, since it facilitates the solution of various problems that arise in practice—the French writers almost invariably give the reciprocals of those values: that is, they form their tables so as to show the annu. which £1 will purchase. This is not so convenient for general use, nor so easy to be dealt with by persons not familiar with the working of decimals. We are glad to observe that many of the English ins. offices are now pub. the tables in both forms.

ANSALDIS DE ANSALDUS, pub. in Geneva, in 1698, *De Commercio et mercatura descursus legales*. To an ed. of this work in 1751 Straccha added two tracts. The work will be quoted in these pages.

ANSELL, CHARLES, F.R.S., Consulting Act.—Mr. Ansell may be regarded as the father of the actuarial profession at the present moment. He was born in 1794, and entered the *Atlas* office as a junior in 1808, being then fourteen years of age. In 1810 he was regularly appointed on the staff. On the 19th June, 1823, he was appointed Act. of the Co., which position he held down to 12th April, 1864, a period of 41 years, when he retired from the active duties of the appointment; but still remains Consulting Act. Mr. Ansell also is or has been Consulting Actuary to the following offices: *National Provident, Friends' Provident, Clergy Mutual*; and during its short career of the *Halifax, Bradford, and Keightley*; and also of the Customs Fund. He has from time to time been called in by the Gov., or by different members of various Govs., to advise on proposals affecting the National finance—notably on the Gov. Superannuation Scheme, which in the end fell through. In 1864, when Mr. Gladstone was introducing the Gov. Life Ins. measure, he spoke of Mr. Ansell in terms of considerable commendation.

Mr. Ansell has been called before various Select Committees and Royal Commissions to give evidence. We may specify a few of these, viz., the Select Committee, which sat in 1841–3, to consider the law of Joint-Stock Cos.; before the Lords' Committee on Provident Asso. in 1848, and before the Select Committee on Friendly Sos. in 1849, and various other Committees on Friendly Sos.; also before the Select Committee on Assu. Asso., 1853.

It is, however, in the matter of F. sos. that Mr. Ansell has rendered the most important services in his day and generation.

In 1835 he pub. *A Treatise on Friendly Societies, in which the Doctrine of the Int. of Money, and the Doctrine of Prob. are practically applied to the affairs of such Sos. With numerous Tables, and an Appendix containing the Acts of Parl. relating to F. Sos.*

This work was really issued under the direction of the So. for the Diffusion of Useful Knowledge, and attracted very considerable attention. It was one of the first efforts which had been made to impart an accurate knowledge of the scientific principles necessary to the proper conduct of these sos. to the persons mainly instrumental in their management.

A large professional practice in relation to the affairs of F. sos. at once resulted from the pub. of this work. We shall have occasion to speak of the work itself more at large under F. sos. We believe it was in relation to the affairs of one of these sos. that the following characteristic incident occurred. Mr. Ansell had been instructed by a late Bishop of London (Dr. Blomfield) to make certain calculations; and when they were completed he named as his fee 100 guineas. "A hundred guineas, Mr. Ansell!" the Bishop exclaimed, in surprise. Mr. Ansell replied that it was the usual fee in such cases. "Why," exclaimed the Bishop, "there are many curates in my diocese who don't get more than that for a year's services!" "That may be," quietly remarked Mr. Ansell, "but Actuaries are Bishops." "And," rejoined his Reverence, "know how to make a charge!" The fee was paid.

Mr. Ansell was one of the first to discover that the extended benefits conferred by the F. Sos. Acts some twenty years since, as to nomineehip, life pol., etc., etc., might be extended with great advantage to L. ins. asso. Accordingly several of the offices of which he was Consulting Act. regis. under the F. Sos. Acts, and so secured the full benefit of these advantages. About this, however, there arose a great outcry; and the Acts were ultimately modified so as practically to exclude such ins. asso. [FRIENDLY SOS.]

Mr. Ansell has within the last few weeks completed the Bonus Investigation of the *National Provident*—a heavy task, conducted on the laborious method of English actuaries, and a notable feat, at an age approaching 80. He still remains active alike in body and mind. Mr. Ansell is or recently was High Sheriff of one of the Welsh counties.

ANSELL, CHARLES, JUN., son of the above, Act. of the *National* since 1852. Was

trained in the *Pelican*, which office he entered in 1843: passing from there to his present position. Is Consulting Act. of *Marine Casualty*.

ANSTON, EDWARD, was Sec. of *London Assu. Corp.* from 1777 to 1787.

ANTEDATE.—To date a document before the day of its execution. This is sometimes done with life proposals to bring them before a recent birthday. It should never be done without the full consent of the office.

ANTE-NUPTIAL.—Before marriage, as an ante-nuptial settlement.

ANTHONY, WILLIAM, blacksmith, aged 21, was apprehended in Oct. 1871, charged with wilfully and maliciously setting fire to the St. George Sufferance Wharf, Wapping; and was supposed to have set fire to 150 other buildings, houses, factories, and premises in the metropolis within the two preceding years. It was charged that this extensive incendiarism had been merely occasioned for the purpose of obtaining the fee, ranging from 1s. to 5s., paid to persons giving the first information of a fire to the fire-engine and fire-escape stations. The prisoner had received more than 150 payments for giving the first information as to as many fires. There were various witnesses, who swore positively as to his identity. He was tried at the Central Criminal Court in Dec. 1871, and sentenced to 12 years' penal servitude. It is to be hoped that on his release he will take to a more honest vocation. It was stated at the trial that since his apprehension, the fires in Lond. from "unknown causes" had decreased about four-fifths.

ANTICIPATION.—Doing or taking a thing before the appointed time; as sums lodged in anticipation of calls; or sums deposited with an office in anticipation of future prems.

ANTILOGARITHM.—In its most common acceptation denotes the number to a logarithm. Thus, in the common system of logarithms, 100 is the antilogarithm of 2, because 2 is the logarithm of 100. Sometimes the term is used to denote the complement of the logarithm, or the difference of the logarithm from the next higher term in the series 1, 10, 100, etc.—*Brande*.

ANTWERP.—We have occasion in several parts of this work to make reference to *Antwerp* as the great centre of maritime affairs some three centuries since. In the *Memoirs of Dutch Commerce*, a work attributed to the Bishop of *Auranches*, the meridian glory of this city is stated as having been about 1550, and is thus accounted for: The persecutions raised in *Germany* on account of religion in the reign of the Emperor Charles V.,—in *France*, under King Henry II.,—and in *England*, under Queen Mary, forced much people to settle in Antwerp, where a vast concourse of all European nations was to be seen: it being then the most celebrated magazine of commerce in all Europe, if not of the whole world; it having been at this time a common thing to see 2500 ships in the Scheldt, laden with all sorts of merchandize.—*Anderson*.

M. ins. was in practice here at a very early period. Malynes, and other writers, say that it had been learned from England. Their authority on this point does not seem very clear. Yet it is quite possible that some of the Lombards and others who had practised ins. here at an early period had afterwards settled in Antwerp. The earliest M. Ins. Ordin. promulgated in Antwerp is under date 1537. We have it upon authority that in 1620 M. pol. issued in Antwerp were expressed to be made "according to the custom of the Lombards in Lombard-st., Lond." But we suspect these words may only have been introduced into pol. issued to merchants and others residing in England.

The rate of int. for money in Antwerp in the 16th century was 12 p.c. p.a. We are told that, towards the end of this century, both Lond. and Amsterdam began to exceed this city in the greatness of their commerce. This was prob. after the sacking of Antwerp by the Spaniards in 1585. The most recent returns we have regarding M. ins. in this city in modern times are for the year 1847-8. Ten M. ins. offices ins. during the year £2,800,735, receiving in prems. therefor £61,392; paying for commission, £2524; for losses, 28,932; and for expenses of management, £5005. From these figures it appears that the *average* prems. for the year were nearly 2.19 p.c. on the sum ins.; that the losses were rather more than 1.03 p.c. on the sum ins., or 47.13 p.c. on the prems. received; that the profits were 24.575 p.c. on the prems.; and the average expenses of management about £500 for each co., or 8.15 p.c. on the prems. Two of the cos. combined F. ins. with M. bus. There is still in force in this city a code for the regulation of M. ins. bus.

There prevails in Antwerp an excellent regulation in regard to fires. If there be any suspicion of incendiarism, or any irregularity, the circumstances are reported to the officers of justice, and they investigate the matter. If the report be unfavourable to the parties concerned, they may be imprisoned and tried.

There have been several very serious fires here. In 1858 the Exchange was burnt, and the archives of the city destroyed. In 1861 the Great Napoleon Wharf was destroyed, involving destruction of property about £400,000, and 25 lives. Later, we believe, there was a petroleum fire, which greatly damaged the shipping.

ANTWERP, INS. ORDIN. OF.—The first document we have to notice under this head is an Ordin. under date 1537, addressed to the Bailiff of Antwerp. A portion thereof only applies to ins., to the following effect: Everybody who has given letters of assurance or surety, whether for a ship or for merchandizes at sea or by land, must satisfy his obligations, and pay the sums stipulated within two months after the loss occurs. It also provided for the payment to the insured, on his giving security of the sum ins., subject to

litigation afterwards if there be a dispute—on the production of a certificate in good form, or the testimony of two respectable men, that the ship, merchandize, or goods enumerated in the letters of assu. have become liable to average, or have been lost.

The next Ordin. is dated 29th Jan., 1549, and is much more in detail than the preceding. We can only deal with it in abstract. The preamble sets forth, that the Emperor had received frequently reiterated complaints respecting the ever-increasing losses and accidents at sea ; that he had nominated commissioners to make an inquiry into the subject ; and the result of their inquiry showed that losses must be attributed to the following causes :

1. That each one as he pleased, shipowners had sent into distant and foreign countries dilapidated vessels of defective construction and small dimensions, insufficiently manned, ill-equipped, and badly armed.
2. Voyaging in company had been neglected even in time of war.
3. Loans *à la grosse* had often been taken on ships equal to and even exceeding their values.
4. Ships had been ins. in excess of their value, and even the wages of every one employed in the service of the vessel.
5. The shippers had caused their merchandize to be assu. to its full value, and even the gain expected ; not only against losses proper, but also against captures by the enemy.
6. Goods had frequently been shipped on board foreign vessels, which vessels were sometimes sold in advance to the enemy.
7. Some have thought to place themselves in surety by procuring safe conducts from the enemy, which has only served to give pirates a pretext to go on board and search the vessels.

The object of the Ordin. was to remedy these abuses. It contained various regulations, as to apparel, crew, arms, description of merchandize, mutual succour, bottomry ; and 4 articles specifically on ins. designed to keep the sum ins. below the value of the ship or merchandize, and seems (says Pardessus) to have been made principally with a view to enforce self-defence against the "Scotch and other pirates."

This last-named Ordin. prob. extended to the whole of the Low Countries, having been proclaimed by the Emperor Charles V. of Germany. In 1551 another Ordin. was proclaimed, which had nothing new as to ins.

We now reach the Ordin. of Philip II., under date of 1563. There has been some question about the proper date : Magens and Stevens each agree with the date here given, as indeed does Pardessus : only that he refers to the earlier Ordin., of which we have just given an account, while the other writers do not. Cleirac speaks of this Ordin. as of Philip II., *pour les assurances de la Bourse d'Anvers*. It was upon this Ordin. and that of Brussels that Adrian Verwer wrote his learned annotations. The Ordin. itself is said to have been drawn, or edited, by the great Siglius. We can only refer to the more special provisions of this Ordin., which is very voluminous. The first two sections are as follows :

I. All masters of ships and seamen shall be obliged to look well after and take due care of ship and cargo ; and in case the same should run any risk or suffer any damage by their fault, negligence, ignorance, connivance, or means, they shall be bound to make the same good again.

II. In case the master, seamen, or other person, receives any hurt, is wounded, maimed, or killed, in resisting of or fighting against enemies or pirates, or in any other service of the ship, such losses and damages of the hurt, wounded, or maimed, together with the full wages, passage, and burial of the dead, shall be paid as a general average by the ship and cargo, for the defence whereof such accident happened : and that according to an award of arbitrators well versed in such affairs.

Here is a remarkable provision :

XI. In order to avoid all dangers and losses, the master shall be obliged, before he gets under sail, to ask the advice of the ship's company, and to follow the opinion of the majority of them, on penalty if he acts otherwise, and any damage happens by that means to ship or cargo, that he shall be obliged to make the same good again, if he be able : if not, his owners for him.

XIII. Should any person be guilty of embezzling or concealing any shipwreck'd goods, they shall be punished with fire, if it be the master of a ship, or a seaman ; and any other person with the gallows ; and be obliged to make restitution for the goods concealed besides.

Then follow a series of regulations regarding ships which damage one another ; of ships' laws, breaches thereof, and other things relating to justice ; then we arrive at what is termed the "Ordin. of Assurances," which embraces some 20 sections, some of them of considerable length. We can only give the more important : many of the others will be noticed under specific heads in various parts of this work.

I. No person shall make assu. upon any goods of value and importance which are not prepared, or are shipped on board vessels that are not fitted out, or are not of the burden, or do not go in the company, as is prescribed in this present Ordin. of Navigation.

II. All assu. upon goods and merchandize shall for the future be made after the custom of the Exchange at *Antwerp* ; and the pol. shall be of the following tenor or substance, without adding of more clauses thereunto :

Tenor of the Policies.—Nicolas van Eemeren, dwelling in *Antwerp*, causes himself to be ins. according to the usage and custom of the Exchange at *Antwerp*, and the Ordin. of the King's Majesty, upon merchandize or goods shipped or to be shipped by him, or others for him and in his name, upon the ship called the *St. Jacob*, whereof *Pieter Heerinck*, of *Amsterdam*, is master, or any other, from the port, harbour, or road of *Sevill*, till and unto the aforesaid city of *Antwerp*, against all risks, dangers, or accidents, that may happen ; which shall run at the risk of the assurers here underwritten, from the hour and date that the said goods and merchandize shall be brought to the above-mentioned port, harbour, or road, in order to be shipped on board the said vessel, or to put them into boats, lighters, or hoys, to be carried to this ship and laden on board of the same, to make the voyage aforesaid. And this above-mentioned assu. is to continue until the said goods shall be arrived at *Antwerp*, and be there brought ashore in good condition without any loss or damage : and

it is agreed that the last as well as the first underwriters shall take part in this assu., and that the said ship may sail backwards or forwards, to the right or left hand, and on every side, and to steer any course or degree, and there to abide or remain, whether by force, necessity, or choice, as the commander of the said ship shall think proper. And the said assurers assure the assured from the sea, fire, winds, friends, enemies, letters of marque and counter-marque, from arrests and detentions of Kings, Princes, and Lords, whoever they be, and from all perils and accidents whatsoever that may happen: let it be in what manner it will, or one could imagine it might be, and they insure the assured from everything, and put themselves in his place, to secure him from all loss and damage; and if any misfortune should befall the said goods or merchandize (which God prevent), the said assurers oblige themselves to pay to the said assured, or the bearer of these presents, the full sum which every one has underwrote, or the loss which the said assured may have suffered, each in proportion to their obligation, within 2 months next ensuing after they shall be duly advertised of the loss and damage. And in case of such unfortunate accident as aforesaid, the assurers before mentioned have given and do give to the said Nicolas van Eemeren, the assured and his agents, power to use the necessary means for preserving the said goods and merchandize, for the benefit or loss of the said assurers, promising to pay all the charges that shall accrue for the preservation thereof, whether anything be recovered or not; and to give entire credit to the accounts of such charges, as made up by the persons who disbursed them, and made oath to them. And the said assurers acknowledge to have been paid for the consideration and price of this assu. by the hands of *John Enriques*, at the rate of 7 p.c., and the said assurers agree and consent that this pol. of assu. shall be of as much force as if the same had been made or passed before any magistrate, public notary, or otherwise; all without fraud or deceit.

The Ordin. proceeds :

III. Likewise if any person will make ins. upon his ship, he may do it according to the form and substance of the above policy.

IV. No ins. shall hereafter be allowed to be made in any shape, either by way of assu., wager, or otherwise, upon ships, goods, merchandize, wages, freight, or other things (nothing excepted), which at the time of the assu. have run any risk; nor against the barrettry, roguery, or other misbehaviour of the master or ship's crew; abolishing and annulling all usances and customs to the contrary: and in case any contract or agreement shall be made to the contrary, we declare the same to be void, and of no force or value.

This, it will be observed, differs very materially from the Ordin. of *Amsterdam*; indeed, this particular Ordin. seems framed specially to exclude nearly all those elements of speculation in the contract of marine ins. which previously had existed, and which nearly two centuries later were actually and specifically sanctioned in the Ordin. of *Amsterdam* and others. The following are the leading stipulations of the Ordin. remaining to be noted.

Every one to conform to the custom of the Exchange at *Antwerp*. If within a year and a day no account of ship and goods is received, loss to be paid, upon proof that such ship and goods *were in being at time of ins. being made*. Voyage not to be altered; or if altered, ins. forfeited. Ships only to be insured for half their value. No master's or seaman's wages to be ins. All ships and munitions to be valued before ins. made. Ins. upon goods and merchandize first cost whereof was less than £1000 Flemish, owners to keep 1-10th of risk. All goods or merchandize to be valued at ordinary rate. Goods to be unladen promptly within 15 days in ordinary cases. Where ins. from "Port to Port," without any mention of landing of goods, risk to terminate 24 hours after arrival of vessel. Double or duplicate insurance not to be made; if made designedly, ins. and prem. to be forfeited. Where this had been done inadvertently, without any fraud intended, first ins. to be liable; if that insufficient, second or other ins. for balance. Where goods not shipped after ins., prem. to be returned, less half p.c. All claims to be made within 4 years. Claims to be paid within 2 months after notice. Then an important regulation as to Bottomré [see BOTTOMRY]. And finally, all contracts, etc., to be made in accordance with this Ordin. "without any one's excusing themselves under pretence of absence, or ignorance, after the expiration of the first six weeks next ensuing."

AORTA.—The great artery which proceeds from the left ventricle of the heart. *Aortic*, relating to the Aorta. *Aortitis*, Inflammation of the Aorta.

APNŒA.—This term is used scientifically to express the effects of interrupted respiration, as in the case of drowning, hanging, or noxious vapours. *Asphyxia* is the term in common use. "For these conditions, however, *Apnæa* is the proper term; this *leads* to *Asphyxia*." —*Hoblyn*.

APOPLEXY.—A sudden suspension or loss of the powers of sense or motion; the heart continues to act, and respiration is continued, though often with some difficulty.—Class LOCAL; Order, Diseases of *Nervous System*.

The deaths from this cause in England show a slight increase. In ten consecutive years they were as follows: 1858, 8629; 1859, 8631; 1860, 9181; 1861, 8795; 1862, 9136; 1863, 9721; 1864, 10,322; 1865, 10,215; 1866, 10,297; 1867, 10,406; showing a variation from 448 per million of the population living in 1858 to 501 in 1864, and back again 490 in 1866 and 1867. Over a period of fifteen years ending 1864, the deaths averaged about 457 per million.

The deaths in 1867 were: Males, 5223; Females, 5183. Of the Males, 338 died under the age of 5; 73 between 5 and 10; 37 between 10 and 15; 49 between 15 and 20; 74 between 20 and 25; 234 between 25 and 35; 445 between 35 and 45; 751 between 45 and 55; 1076 between 55 and 65; 1235 between 65 and 75; 788 between 75 and 85; 116 between 85 and 95, and 7 over 95. Of the Females, 249 died under 5; 42 between 5 and 10; 32 between 10 and 15; 73 between 15 and 20; 87 between 20 and 25; 219 between 25 and 35; 359 between 35 and 45; 737 between 45 and 55; 1063 between 55 and 65; 1300 between 65 and 75; 866 between 75 and 85; 153 between 85 and 95, and 3 over 95.

In the *Scottish Widows*, out of 1398 deaths in 7 years ending 1866, 95 are returned as from apoplexy. Of these, 1 was under 30; 2 under 35, 4 under 40, 8 under 45, 10 under 50, 9 under 55, 15 under 60, 17 under 65, 13 under 70, 7 under 75, 5 under 80, 3 under 85, and 1 under 90, being at the rate of 6½ per cent. for all ages; the mean age at death being 60.

In the *Scottish Equitable*, out of 1855 deaths in 33 years ending 1864, there were 116 returned as from apoplexy. Of these 6 were under 35, 26 under 45, 39 under 55, 24 under 65, 18 under 75, and 3 over 75.

It may be remarked that until comparatively recently almost all sudden deaths were attributed to apoplexy; whereas, really, the very sudden deaths more frequently arise from diseases of the heart.

APOTHECARIES' ACT.—For regulating the practice of apothecaries, the Act 55 Geo. III., c. 194 (1815), reciting and confirming the charter of the 15th year of James I. granted to the Apothecaries Co., enacts that the So. may appoint persons to enter any apothecary's shop in England or Wales, to search and determine whether the medicines, etc., therein be wholesome, etc.; who may destroy any that may be found pernicious or hurtful, with power to fine offenders, etc. A most important measure for the safety of human life.

APPAREL OF SHIP.—The apparel of a ship consists of the necessary rigging, sails, outfit, and equipment, to prepare her for a voyage, or place her in a sea-going condition.

APPEARANCE BEFORE THE BOARD.—It was the practice of the earlier life offices to require all persons seeking to be ins. to appear before the Board of Directors personally. We believe the practice is still maintained by the *Equitable*, and, perhaps, by one or two other offices. In process of time, as L. Ins. extended into the provinces, compliance with this regulation became more difficult, and pecuniary fines were inflicted by way of penalty or compensation for non-appearance. Modern competition has brought about almost a complete abandonment of the practice. We suspect it was a regulation very essential to the earlier offices.

In 1797 the *Pelican* introduced the following modification: Persons not appearing before the Board, or an agent of the Co., fined as follows: On policies for single year, 10s. p. £100; on policies for terms not exceeding 7 years, 15s. p. £100; on policies for more than 7 years, or for the whole of live, 20s. per £100.

In the *Hope Co.* (1807) there was the following provision: Persons ins. their lives, and not appearing at the office of the Co., are subject to an add. charge of 15s. per £100; but in the event of their appearing before the second ann. prem. fell due, and their health being approved, the add. charge to be returned.

The *Imperial* in 1820 modified the requirement as follows: Persons whose lives are proposed to be ins. are to appear at the Co.'s office, or before one of the sub-committees in the country, or to one of the Co.'s agents, or pay a fine for non-appearance of 10s. p.c. on ins. for one year; 15s. per cent. on ins. from 1 to 7 years; and 20s. on ins. for longer periods.

Mr. Pocock, writing of the practice in 1842, says:

This fine is required on the ground that a non-appearance amounts in reality to an add. risk: for even where the certificates are quite satisfactory, it sometimes happens that the board of directors will decline the assu. from some obs. of latent disease in the person or countenance, made by the medical advisers, which was not equally evident to others.

Mr. Griffith Davies said (1843): I think I have known only one instance where our directors accepted a life which their medical man pronounced doubtful; but I have known many cases where they rejected lives which were approved of by the medical man. . . . One director says, I do not like his appearance; and another says, Nor do I; and it goes to the vote, and the individual is rejected.

Mr. Ansell said (1843): There is another advantage which is sometimes derived from men of the world seeing the lives which are proposed for ins., and that is, that men's healths are frequently indicated by their appearance; and it often leads to inquiries as to the parties' habits of life.

The following is as complete a scale of the fines formerly charged as we can compile:

Albion	15s. per £100.	Law Life	£1 per £100.
Alliance	£1	London Assu. ...	£1
Amicable	10s.	Palladium	£1
Atlas	10s.	Pelican	£1
Brit. Commercial...	£1	Provident	£1
Eagle	15s.	Rock	15s.
Equitable	£1	Royal Exchange ...	£1
Globe	15s.	Sun	£1
Hope	£1	West of England...	15s.
Imperial	£1	Westminster... ..	£1

APPELLANT, THE PARTY APPEALING.—The party resisting the appeal is called the *Respondent*.

APPLICATION FOR INS.—In the U.S. what we here term the *proposal* for ins., is called the "Application for Ins.," and it is there as here regarded as the *legal basis of the contract*. "The interests of the assu. as well as those of the Co., require that the

questions asked therein should be fully, explicitly, and truthfully answered."—Instructions *Connecticut Mut.* The *New York Life* has adopted the excellent plan of appending on a fly-leaf of every policy a copy of the "Application." Any mis-statements orig. made may be seen and corrected.

APPOINTEE.—A person selected for a particular purpose ; also a person in whose favour a power of appointment is executed.

APPORTIONMENT.—A division of a rent, common, incumbrance, fine, or other charge. The 11 Geo. II. c. 19, s. 15 (1738), apportions rent between the representatives of a deceased tenant for life, and the person succeeding in remainder ; and this statute has been extended by Equity to the case of tenant-in-tail. The 4 & 5 Wm. IV. c. 22 (1834), was passed to obviate the doubts which had arisen upon the preceding Act. As to apportionment of annu., see ANNU. APPORTIONMENT ACT.

APPORTIONMENT OF FIRE LOSSES.—This term applies to the mode of ascertaining the contributions of various offices, under various policies, in the event of a fire occurring to property the subject of more than one ins. Most fire pol. contain a clause to this effect :

In case of the existence of any other ins. or insurances on the property covered hereby, this co. shall be liable only to pay a rateable proportion of any loss or damage which may be sustained along with the office or offices interested.

Specific property, as houses, buildings, household furniture, and even stock-in-trade, although ins. under several pol., may, notwithstanding this clause, be hardly lifted out of the category of ordinary fire ins. adjustments. But when we advance a step further, and reach merchandize ins. in dock, wharves, and bonded warehouses—some portion under specific pol., and the remainder and by far the greater portion under "floating pol.," subject therefore to the operation of the "average clause"—we at once discover that the apportionment of fire losses must frequently become technical in the highest degree.

It is no part of the plan of the present work to enter upon technical details of this character. It is enough that we point out the necessities which arise for such information, and as far as possible the sources from whence it may be best obtained.

Mr. Richard Atkins, surveyor to the *Sun Fire*, in the intro. to his little book *On the Average Clause*, 1866, gives a very suggestive indication of the considerations involved in the apportionment of fire losses and their causes.

The curiously interwoven combinations of our commercial system are, no doubt, well calculated to originate on every hand questions having, at least, the aspect of novelty. The money advances—the powers of the holders of dock and wharf warrants over pol. of assu.—the limitations and extensions of time for payment and delivery—the beginning and ending of responsibility between buyer and seller—all fruitful sources of inquiries, partly legal, partly technical, the answers to which, however, involve the most important practical results.

In add. to the class of questions just referred to, . . . a very fair crop of curious and even subtle inquiries have recently arisen in reference to the operation of the modern Average Clause, in the settlement of mercantile claims. By far the greater part of these fortunately admitted of a comparatively easy solution, by appeals to the well-worn traditions of the past. Reverence for ancient and possibly unscientific usages has not entirely died out, and it was found to be the prudent course for all concerned to rely upon well-authenticated precedents for the rules of settlement.

It was Mr. Atkins himself who, in the pages of the *Assu. Mag.* in 1853, opened up the subject of fire loss apportionments under mercantile pol. ; and appeared to suggest that the time had arrived for science to supersede tradition. He commences upon his task as follows :

It is a point well worthy of obs., that while England has been for centuries past so eminently practical in every branch of commercial enterprise, there have been but few attempts made until lately to examine freely the well-worn rules of ins. bus. with a view to alteration. There has prevailed a general, and not altogether unwise, determination to let well alone, and quietly continue the system, however faulty, which experience had shown could lead to an ultimate and satisfactory profit. Our continental neighbours, however, and especially our friends the Germans, have in modern times set a better example, and the pages of this *Mag.* continually give striking proofs of the careful manner in which facts are now collected on every hand, and brought forward for the purpose of scientific inquiry in all branches of the bus. of ins.

Mr. Atkins continued to ventilate the question further, during a period of several years.

Mr. Thomas Miller, then of the *Scottish Union*, and now of the *Royal*, contributed an able paper to the *Assu. Mag.* in 1856, *A Problem in Fire Ins.—To apportion a given loss on Property Ins. by Specific Policies*. This paper should be read in conjunction with another from the same author.

In 1859 Mr. Miller resumed the consideration of the subject in a paper in the *Assu. Mag.* (vol. viii.) : *A Chapter in Fire Ins., "Specific" and "Average."* The author says :

According to present practice, when property is ins. both by average and by specific pol., the latter have to bear the whole of any loss which may occur, unless it exceed the total amounts which they ins. ; and in that case the excess of loss over the amounts they ins. is covered by the average pol., and is subject to average at the settlement of the claim. As it may be deemed advisable by the offices, at some future period, to make average and specific pol. bear proportionate shares of loss on property jointly ins. by them, it is proposed to determine the rules by which their respective proportions may be ascertained,

This he proceeds to discuss.

In the same year (1859) Mr. David Christie, also of the *Sun*, read before the Inst. of Actuaries a paper : *On the Settlement of Losses by Fire under Specific and Average Pol., separate and combined*. The author says :

A note of alarm has been sounded at the present mode of adjusting fire losses under average pol.,

and it will be well, though for other reasons, hereafter to be explained, than those to which it owes its orig., that it be not allowed to die away without some effort to gain additional vantage-ground towards the substitution of a comprehensive and reasonable scheme of apportionment *for the mischievous and unsound practice which now exists*. The different systems in operation are so unnecessarily complicated, and the machinery by which each is set in motion so rude and unconnected, that the wonder is, not that any attempt at improvement has given rise to a word of warning, but rather that the cumbersome construction should have lasted so long.

In 1866 Mr. Atkins's papers were collected, and with some add. remarks pub. : *The Average Clause, Hints on the Settlement of Claims for Losses by Fire under Mercantile Pol.* This work we have already referred to at the commencement of the present art.

The first work pub. in this country intending to embrace some consideration of *all* the points necessarily arising under this head, was that by Mr. Wm. Henry Hore, of the *Liverpool, Lond., and Globe*, pub. 1870 : *Remarks on the Apportionment of Fire Losses, illustrating by numerous examples the practice of the offices in complicated average and non-average cases : and suggesting some means by which the difficulties hitherto experienced in apportioning losses covered by non-concurrent pol. may be avoided in the future.*

This work—while not claiming to be exhaustive—has attracted a very large amount of attention ; and it is not too much to say of it, that if the book itself did not contain rules for the settlement of the practice, the discussion which has followed upon it has done a very great deal towards this desirable end. In reference to the clause quoted at the commencement of this art., Mr. Hore says :

Great differences of opinion exist as to the proper manner of giving effect to it in cases that frequently occur, where pol. of widely different ranges and (or) conditions, become jointly interested in one loss. Rules (made by the offices from time to time) exist for the regulation of apportionments, but they are all more or less of an empirical nature. In many cases they give anomalous and inequitable results ; frequently they are interpreted by different offices as justifying different apportionments of the same loss ; sometimes they are disregarded altogether ; and they fall very far short of being applicable to all possible cases.

Among the results of Mr. Hore's book was the pub. in the *Ins. Record*, during the year 1871, of a most valuable series of papers on *Fire Loss Apportionments*. The writer of these papers appears to have obtained an entire mastery over this complex subject. That which was left obscure previously he has made quite clear—or as clear as the nature of the subject will admit ; and in future the apportionment of fire losses should no longer rank among the occult sciences—but must rather be regarded as a well-understood branch of fire ins. knowledge.

The reader should now turn to the art. AVERAGE POLICIES.

APPORTIONMENT OF FUND BETWEEN LIFE TENANT AND REVERSIONER.—Mr. Andrew Baden read a very practical paper before the Inst. of Act, 1871, on the equitable apportionment of such a fund. See *Assu. Mag.*, xvi., p. 269. Mr. Jellicoe had read a paper on the same subject in 1855 (*Assu. Mag.*, vi., p. 61) ; and to re-open some of the principles then laid down was one of the purposes of Mr. Baden's paper. The subject will be discussed under REVERSIONS.

APPRAISEMENT,—The act of valuing property, goods, furniture, etc.

APPRENTICESHIP INSURANCE.—During the reign of Queen Anne—that is, early in the last century—when Lond. ran wild upon ins. projects of every variety, there was introduced a system of "Apprenticeship Ins." Its professed purpose was the providing of means to enable apprentices to set up in business for themselves. The method upon which the bus. was actually conducted was very closely akin to gambling. A mut. contribution was set on foot. Every member agreed to pay a contribution, either at stated periods, or to each claim made, until his own turn came. But instead of the funds being reserved for the actual purpose announced—a purpose in itself most legitimate—quarterly distributions were introduced : and hence we find an announcement : "The apprentices also this first quarter for 2s. 6d. have received 20s. each clear." Thus a species of gambling, pure and simple, was introduced.

We propose now to notice the prominent features of each of these projects of which any trace remains ; and this in their chronological order. We have reason to suppose that some hundreds of such offices existed in Lond. alone ; whether they extended into the provinces does not seem clear. In order to understand what follows, it is necessary here to explain that the *Dividend Sos.* were those in which the subs. made periodic payments, and there were periodic divisions of the amount of the subs. paid in up to times of div. The *Claim Sos.* were those in which the subs. bound themselves to pay up a certain amount to every claim falling in—after the true manner of mut. contribution. The early members were generally promised greater advantages than those who joined later ; and the condition of the member receiving the maximum amount advertised was that the so. should "be full"—that is, have its full complement of members—a circumstance which very rarely occurred.

The "*Perpetual Office for the Charitable So. at Lond. Stone*," founded June, 1709, which carried on ins. for births, marriages, and endowments, had also an *apprentices* branch, and announced : "The like tickets for dividends every quarter at the same office for helping apprentices to set up."

Under date 8th May, 1710, we find the following :

This day is opened an office next Gresham College, Bishopsgate-st., to raise a sum of money to enable apprentices to set up their trades when they have served out their times : where any one who

now is, or that is to be, an apprentice may, by paying 1s. entrance, and 2s. 6d. per quarter, gain probably from £40 to £50 up to £500 or £600.

The *Perpetual Office at Lond. Stone* made the announcement of certain divisions or dividends in Oct. 1710, and therein was the following: "The apprentices also this first quarter for 2s. 6d. have received 20s. each clear."

On the 30th Nov. the *Profitable So.* (afterwards called the *Flower de Luce* Ins. Office), near Lyons Inn, announced the opening of two ins. books on apprentices "that shall serve out their time:" one for £1000 dividend; the other for £500.

On the 5th December, 1710, there was opened at the Lond. Coffee-house, Threadneedle-st., eight sos., "4 on apprentices, and 4 on marriages, each consisting of 4000 subscribers, estab. on a new method more advantageous than any other yet on foot, by way of monthly contribution and monthly dividend."

On the same day there was opened at the Bunch of Grapes, near Leg Tavern, Fleet-st., a scheme for ins. of clerks and apprentices. No details.

On the 6th December the *Union So.*, at Black Lion, Drury Lane, announced 2 offices for apprentices and clerks, one at 5s., with £500 if full; the other 1s., and £100 if full.

Under date 6th January, 1711, the *Original Loyal So.*, held at sign of City of Chichester, near Spur, in Southwark, announced an apprenticeship scheme. Also 3 sos., clerks, etc., £500, £200, and £100, claim 3 months.

Under date 9th January, 1711, we find the following:

Money for marriages, apprentices, and children on their births, at 7 and at 14 years, is all completely performed at the *First and Perpetual Office* at Lond. Stone, by the directions of the first inventor, whose sons are to succeed him. Last Wednesday (3rd Jan.), 8 new married for 12s. had near £16; and next Wednesday the apprentices for 4s. will receive above £4. Fairness and safety of the office testified by 12 dividends of near £1000 to about 140 persons; and now by 18 months' experience, and above 4500 entries.

This office parades its success, "notwithstanding an exorbitant number of interlopers daily setting up."

On 11th January there was opened at the *Noble and Honest So.*, at the Vine, Newgate-st., 3 subs. for apprentices, clerks, and servants.

On 15th January there were opened by the *Utile* office, 3 div. subs. on servants and apprentices.

On 24th January was opened by the *Substantial So.* "a general ins. office in St. Lawrence Lane, over against the Three Golden Lyons," a subs. for apprentices duly serving their times, "where security will be given in the hands of trustees for £10,000."

On 25th January the *Third Secure So.* announced as newly opened 3 books of subs. on apprentices, by div. £1000, £500, £250.

On 7th February the *Fairest and most Beneficial So.*, at Sword Cutters, Corner of St. Paul's Churchyard, opened a subs. on apprentices and servants. "The claim of subs. entering before or on 17th inst., may become payable on apprentices and servants in two months."

Same day the *Opposing Office*, Crown Court, announced subs. for apprentices by weekly or monthly div. "This office meets with very great encouragement by reason the like freedom is not given to the subs. in any yet extant of this nature; neither is there any office like it for profit and advantage to the subs. *No time is limited before . . . expiration of an apprenticeship.*"

On 8th February there was opened at the *Union Office*, Bishopsgate-st. Without, 3 subs. on clerks and apprentices: £500, £250, and £100.

On 9th February the *Hamshire* [? Hampshire] So., Bell Court, near Aldersgate, took a subs. for clerks and apprenticeship ins. by claims and monthly div., 10 weeks.

On 15th February the *Grand Office of Ins.*, Crane Court, Fleet-st., opened a subs. on clerks and apprentices, for div.

On 17th February there was announced from "King-st., fronting St. Andrew-st., near Seven Dials," 3 subs. on expiration of clerkship and apprenticeship, "and such are the extraordinary methods used for the ease and encouragement of the subs., that those who enter in thereafter 50s. will have greater claim than the 1st 50, tho' not one enters after them, which is only a supposition, and very improbable."

On 22nd February the *Profitable and most Equitable Office* announced a subs. for clerks and apprentices—div. 6 months. "In this last so., master, mistress, parent, guardian, or friend, may ins., *but no apprentice permitted to do so.*" This last intimation leads to the inference that complaint had been made of the gambling character of many of the preceding schemes.

On 27th February the *Hampshire So.* announced a subs. on apprentices by way of claims and dividends.

About this date the *Substantial So.* announced that clerks and apprentices were entered by them in the same books as servants.

Early in March, 1711, an end was made of schemes of this class, by the passing of 9th Anne, c. 6, sec. 57 of which recites:

Whereas several ill-disposed persons, with design to defraud Her Majesty's subjects, have of late presumed to erect and set up offices or places for making ins. on marriages, births, christenings, or service: which practices are also prejudicial to the public, etc.

It is then enacted that any person who, after the 8th March then next, should set up any such office, should forfeit for every such offence £500.

It was, no doubt, intended by the Act to reach apprenticeship ins. offices under the general term "service" ins. ; and in that respect it was successful ; but the business was continued in a somewhat novel and unexpected manner.

The *Grand Contribution* Office of Crane Court, Fleet-st., which had been founded with a view to ins. apprentices, etc., after the old manner, now altered its course, and undertook ins. on the LIVES of apprentices, children, etc.

The *Hudson's Bay Trading Co.*, which had obtained its charter in 1670, appears, in common with other trading corporations of the period, to have deemed its powers sufficiently elastic for any purpose ; and had therefore in 1711, or before, undertaken the bus. of apprenticeship and marriage ins., as we have seen it at one time undertook the granting of annu. on lives. Accordingly we find that about the month of June, 1711, it issued a notice to all subs. to pay up arrears ; and that books would be opened on 17th July, and attendance given from 10 till 2 and from 4 till 7, for the purpose of taking subs. for apprenticeship ins.

On 6th September notice was given by the Co. that a div. would be made on 6th October next, "for enabling apprentices to set up their trades, unto such whose contract or indenture expires on or before this inst. September."

On the 6th February, 1712, the *Hudson's Bay Co.* issued the following :

Being informed of some frauds designed at their 3rd dividend of apprentices which will be paid the 2nd April next, pursuant to their proposal ; they therefore give notice, that whoever shall discover any person who shall presume to make claim on any clerk or apprentice who was either dead, married, or deserted from his or her master's or mistress's service, before the expiration of their contract or indenture, shall upon proof of such fraud receive the sum of 10s. reward, such proof to be made before the 25th March next.

On 29th March, 1712, the *Perpetual* "and only lawful office of the first inventor for the benefit of newly married persons, apprentices, and children, is still continued at Lond. Stone," issued the following notice :

And whereas the profits and encouragements of the same have of late been lessened by the setting up of above 200 other Unlawful offices, by indigent proprietors, who could give no security, but cheated the public, and are all now suppressed by Parl., though several of them are begun again to act the same under new disguises, by which they think to avoid the law, etc.

The bus. under this phase ultimately died out. The precise circumstances under which it did so will be explained under GAMBLING INSURANCES.

Provisions for apprenticing lads may now be and are made by means of ENDOWMENT pol. It is indeed one of the most legitimate purposes for which such pol. are granted.

APPROXIMATION (Lat. *proximus, nearest, next to*).—A drawing near to. In mathematics quantities are said to be approximate, which are nearly, but not absolutely, equal. In mathematics too quantities are frequently investigated which, from their very nature, are not susceptible of accurate numerical determination. We have then recourse to methods of approximation by means of which the values of such quantities can be ascertained to any required degree of accuracy.—*Brand's Dict.*

The early writers on annu. values used methods of approximation. Those employed by Halley, Simpson, and Baily, will be found collected in *Baily's Int. and Annu.*, p. 123. See also Method by Mr. E. Ryley, *Assu. Mag.*, i., p. 332.

In 1850 Mr. Peter Hardy read before the Inst. of Act. a paper *On Methods of Approximation*. He afterwards found, and acknowledged, that Prof. De Morgan had, in his *Essay on Prob.*, enunciated the germ of the idea, he (Mr. Hardy) had developed in this paper.

APPURTENANCES.—Belonging to another thing ; as yards, orchards, gardens appurtenant to a dwelling-house. *Appurtenant*, pertaining or belonging to.

ARBITRAMENT.—The award or decision of arbitrators upon a matter of dispute which has been submitted to them. *Arbiter*, a private extrajudicial judge ; an arbitrator or referee.

ARBITRATE.—To judge ; to make an agreement.

ARBITRATION (from *arbiter, an umpire*).—In law, the investigation before an unofficial person or persons of the matters in difference between contending parties. The judgment of the arbitrator is called an award. [AWARD.] Submission to arbitration was authorized and made equivalent to the decision of a jury in 1698, by 9 & 10 Wm. III. c. 15. The Common Law Procedure Acts, 15 & 16 Vict. c. 76 (1852), 17 & 18 Vict. c. 25 (1854), and 23 & 24 Vict. c. 126 (1860), authorize the Judges of the Superior Courts to order compulsory arbitration.

Most pol. of ins. contain an arbitration clause, to the effect that in the event of any dispute concerning the subject-matter of the pol., the same shall be referred to arbitration. But against this it must be remembered that it is a rule of law, *that parties cannot by contract oust the Courts of their jurisdiction*. They may, however, agree that the measure of damages shall be settled by arbitration as a condition precedent to an action. The decisions appear to be uniform ; that is those of more recent date.

The earliest ins. case we have met with involving this point is that of *Kitt v. Hollister*, tried at the Guildhall, in 1746. The pol. contained a power to refer. The plaintiff

averred in his declaration that there had been no reference—thus throwing the onus on the defendant of not having set in motion his remedy. It was there held, that the agreement of parties could not oust the Court; and as no reference had been made, and none was depending, the action was well brought, and the plaintiff must have judgment.

The leading case on the subject appears to be *Scott v. Avery*, finally decided in the House of Lords in 1856. Avery had effected in a mut. ins. co. a pol. on a ship, one of the conditions of which was that the sum to be paid for loss to any one insured should, in the first instance, be ascertained by a committee; but if a difference should arise between the insured and the committee relative to the settling of any loss, or a claim for average, or any other matter relating to the ins., the difference was to be referred in a way pointed out in the conditions: provided always that no insured who refused to accept the amount settled by the committee should be entitled to maintain any action or suit in Equity on his pol. until the matter had been decided by the arbitrators, and then only for such sum as they should award. The obtaining their decision was declared a condition precedent to the maintaining of an action. *Held*, that these conditions were lawful, and that (even should the difference relate to other matters than those of mere amount), till an award was made, no action was maintainable.

The case of *Roper v. Lendon* (Sec. of Kent Fire) throws some light upon the principle involved in the preceding decision. It was there held that a condition in a contract to refer any question which may arise out of the contract will be, if so stated, a condition precedent to the right to sue on the contract; *but unless the condition expressly stipulates that until arbitration had no action shall be brought*, its performance is not precedent to the right to sue on the contract. This case was determined in 1859.

In the case of *Braunstein v. Accidental Death Ins. Co.*, tried in the Queen's Bench, 1861, there was a condition that in case of difference of opinion as to the amount of compensation payable in any case, the question should be referred to a person to be named by the sec. for the time being of the Master of the Rolls, and all expenses should be subject to such arbitrator, and the award made on such arbitration was to be taken as a final settlement of the question, and might be made a rule of Court. *Held*, that a reference in the manner prescribed was a condition precedent to bringing an action for an injury within the pol.

In the case of *Tredwin v. Holman*, tried in the Exchequer, in 1862, the pol. was subject to the following rule:

All average claims and claims of abandonment shall be adjusted and settled, conformably to the custom of Lloyds' or the Royal Exchange, by a professional average-stater. But should the committee or the assured be dissatisfied by the adjustment, they may refer the same to two professional average-staters, or to two other competent persons, with power to such two persons to appoint an umpire, and the award of such two persons shall be final; and all other cases of dispute of whatever nature shall be referred in like manner; but the committee or assured, by mut. consent, may refer all such adjustments or disputes to one person only, whose award shall also be final, and no action shall be brought until the arbitrators have given their decision.

Held, that no action could be maintained on the pol. for a total loss until the claim had been adjusted and settled by the arbitration pursuant to the rule.

The teaching of these cases appears to be this. If a pol. or other contract contains (at the time of its execution) an agreement to refer all or any disputes, the Court will uphold that agreement, provided steps be taken towards enforcing the reference previous to any action being brought. The rule against ousting the Courts of their jurisdiction appears to apply *only to agreements of reference made after disputes have arisen, or after the amount in question has been determined*. This was the principle laid down in *Blythe v. Lafone*: i.e. "The statute does not give the Court power to stay proceedings in an action upon a deed or an instrument, *unless the deed or instrument contains an agreement to refer differences*, though the parties may have made an agreement in writing subsequently to the differences arising." Decided 1859, see *Fisher's Digest*, 218.

In the more recent case of *Elliott v. Royal Exchange*, decided in the Exchequer Chamber, 1867, the facts were as follow: By a pol. against fire, it was declared that the cap. of the corp. should be liable to pay to the insured any loss by fire not exceeding £4200, "according to the exact tenor of the articles hereunto subjoined," one of which was in the following terms:

All persons assu. by this corp. are, upon any loss or damage by fire, forthwith to give notice to the office in Lond., or to the known agents of the corp., and within 15 days after such fire deliver in as particular an account of their loss or damage as the nature of the case may admit, and make proof of the same by their oath or affirmation, and that of their domestics or servants, and by their books of accounts, and such other proper vouchers as may be required; which loss or damage, after the same shall be adjusted, shall immediately be paid in money by the corp. without any deduction. Or they shall at their option forthwith provide or supply the assu. with the like quantity and quality of goods with those burnt or damaged by fire; or at the expiration of 60 days after notice of the fire, they shall expend in rebuilding or repairing any building damaged or destroyed by fire, the sum assured thereon, under the direction of able and experienced workmen, if the loss and damage shall in their opinion amount thereto. *In case any difference shall arise touching any loss or damage, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding on all parties*; but if there shall appear any fraud or false swearing, the claimant shall forfeit all benefit of claim.

Held, that the covenant was not an absolute covenant to indemnify, with a collateral

agreement to refer disputes to arbitration; but was a covenant to pay an amount adjusted between the parties by agreement or arbitration; and, therefore, that the adjustment of the amount was a condition precedent to a right to sue on the covenant in the pol. Thus, again, the arbitration clause was limited to its proper function of ascertaining the amount actually due under the pol. in respect of the loss, and so it was in conformity with the previous decisions.

In Mr. Flanders' excellent treatise on F. ins. (Phil., 1871), we find the following under "remedy of the insured":

If the loss incurred by the assured is not paid, he may sue for the amount, notwithstanding a stipulation in the pol. to refer all disputes to arbitration; such a stipulation being held invalid as an attempt to oust the Courts of jurisdiction by excluding the assured from all resort to them for his remedy. That is, a stipulation which in effect says that the parties shall never be heard in Court, is against the liberty and dominions of the law, and void.

The law is the same here, if the loss be not paid *when the amount of the loss has been determined*.

The more important clauses of the *Common Law Procedure Act of 1854*, 17 & 18 Vict. c. 125, are in effect as follows:

By s. 11. Whenever the parties to any deed or instrument in writing to be, after 24th of October, 1854, made or executed, shall agree that any then existing or future differences between them shall be referred to arbitration; and they or any one claiming through or under them shall nevertheless commence an action in respect of the matters so agreed to be referred; the Court, or a Judge, on application by the defendant after appearance and before plea, upon being satisfied that no sufficient reason exists why such matters cannot or ought not to be referred, according to the agreement of the parties, and that the defendant was at the time of bringing the action and still is ready and willing to join and concur in all acts necessary and proper for causing such matters to be decided by arbitration, may stay the proceedings, on such terms as to costs and otherwise as may seem fit.

By s. 12. If in case of arbitration the document authorizing the reference provides that the reference shall be to a single arbitrator, and all the parties do not, after differences have arisen, concur in appointing one, or if the one appointed refuse to act, or become incapable of acting or die, and the terms of the document do not show that it was intended that the vacancy should not be supplied, and the parties do not concur in appointing a new one; or if where the parties, or two arbitrators, are at liberty to appoint an umpire and do not, or if the appointed umpire refuse to act, or become incapable of acting or die, and the terms of the document authorizing the reference do not show that it was intended that the vacancy should not be supplied, and they do not appoint one; then any party may serve the remaining parties or arbitrators with a written notice to appoint an arbitrator, or umpire, as the case may be; and if within 7 clear days after the service of the notice no arbitrator or umpire is appointed, a Judge may, upon the application of the party who serves the notice, appoint an arbitrator or umpire, who has the like power to act as if appointed by consent of all parties.

By s. 13, it is provided that when the reference is to two arbitrators, one to be appointed by each party, and either fails to appoint, the other may, after giving 7 clear days written notice, appoint an arbitrator to act alone. S. 14 enables two arbitrators to appoint an umpire. S. 15 directs that the award shall be made within 3 months after the arbitrator has been appointed and entered upon the reference, unless the time has been enlarged by the consent of parties, or the Court, or the Judge. S. 10. The award may be enforced by the authority of a Judge, at any time after 7 days from the time of pub., notwithstanding that the time for moving to set it aside has not lapsed.

It seems hardly necessary to add, that where *Fraud* is imputed, the question of arbitration cannot be entertained. [CLAIMS.] [COMPROMISE.] [FRAUD.]

ARBITRATOR, OR ARBITER, a disinterested person to whose judgment and decision matters in dispute are referred.

ARBUTHNOT, JOHN, M.D., pub. in 1692: *Of the Laws of Chance, or a Method of Calculation of the Hazards of Game Plainly Demonstrated*. This appears to have been one of the earliest, if not the first work pub. in England on the subject.

ARCHANGEL.—This town, like many other Russian towns, has suffered severely by fire. In 1763 it was entirely destroyed; 1777, 200 houses were burnt; in 1793, 3000 houses and the cathedral and other public buildings were destroyed.

ARCHER, HENRY, was Act. of *Operative Mut.* from its formation in 1845 until it passed out of sight.

ARCHER, W. H., was Act. of *Catholic Life* in 1849; and of *Catholic Gild* Prov. in 1850. We do not know if this be the same Mr. W. H. Archer, who afterwards became, and we believe still is, Reg.-General of Victoria. That gentleman has shown what interesting statistics may be compiled even concerning very young colonies; and has also shown great skill and method in the arrangement. The name has become a household word in statistical circles here.

ARCHITECTS, CIVIL ENGINEERS, BUILDERS, AND GEN. F. AND L. INS. ANNU. AND REV. INT. CO.—This Co. was formed by D. of Sett. dated 18th November, 1847, and enrolled under 7 & 8 Vict. c. 110, with an authorized cap. of £1,000,000. The Chairman was Sydney Smirke, A.R.A., and the Man. and Act. Mr. John Reddish. The prosp. said, "The rates for both F. and L. Ins. are as low as can with safety be taken." As to life, "One half the ann. prem. may be left unpaid for 7 years, or one-third to the end of life—thus large sums may be ins. at the smallest possible outlay." The Co. had provincial directors in Manchester, Exeter, Northampton, Hertford. In 1850 a special Act—13 Vict. c. x.—was obtained for changing the name of the Co. to the *British Assu. Co.*, under which heading its hist. will be continued.

ARCHITECTS LIFE AND FIRE.—A Co. under this title was projected in 1847. It was afterwards founded under the new name.

ARCUS SENILIS (*bow of age*).—An opaque circle seen in the eyes of some persons of advanced age, and depending on fatty degeneration.—*Hoblyn*.

ARGLES, G. F., was Sec. of Lond. branch of *Brit. and Foreign Marine* for several years ; and afterwards became Sec. of *Hercules* (No. 3).

ARGUS LIFE ASSU. Co., founded in 1833, with an authorized cap. of £300,000, in 3000 shares of £100, with £25 paid. The price of the shares has varied as follows : 1862, £28 ; 1865 (15 April), £17 10s. ; 1871 (1st December), £22 to £24. The causes of these variations may be found in part in the subsequent hist. of the co., but the variations are also to be traced to the periods of declaring a bonus, and the amount of such bonus.

The orig. prosp. contained, amongst other things, the following statements : "L. assu. enables those who depend on personal exertion or on life income for support, and all persons who may be incapable of accumulating a sufficient fund out of their savings, to secure a maintenance for their families in the event of premature death. It gives to owners of landed property the opportunity of providing for widows and younger children without incumbering their estates." "So extensive, however, is the practice of L. ins. in this country, and so numerous are the cases in which it may be resorted to as an economical mode of investment, or as a precautionary measure of security, that although many excellent offices have been estab. for this purpose, they do not appear to have kept pace either with the rapid advance of pop. or the increased demands of the community. *This consideration has led to the estab. of the Argus.*" "In forming this estab., the object of the Directors has been to present great and unusual advantages to the assured. Their attention has been chiefly directed to 3 points, viz. : (1). *To offer the lowest rates of assu. consistent with safety to the inst.* (2). *To give increased facilities in effecting assu.* And (3). *To afford to the pol.-holders security for the prompt settlement of their claims.*" "In furtherance of the first object, they have, after a careful consideration of the best authorities, and the most authentic obs. on the duration of human life, and after minute and laborious calculations, been enabled to frame a set of T. extensively varied, to suit the object of different parties, and presenting *much lower rates of assu. than those of any other office.*" In view of the second object, they were to have "daily boards," and to dispense with "all unnecessary formalities," so that a pol. might be delivered "in a few hours." As to the third object, there was to be no "vexatious litigation or delay in the settlement of claims by reason of technical objection, or unintentional misstatements of any kind." On the whole, the Directors felt confidence that "by combining economy and security, with facility and despatch of bus., they have effected such improvements in the system of L. ins. as will secure for this estab. a decided preference on the part of the public."

As to the rates of prem., they were about 5 p.c. *higher* than those charged by *Economic* at the same period ; but they were lower than those charged by many offices. Pol. were issued on increasing and decreasing rates of prem. Fixed rates of prem. enabling the ins. to travel in all parts of the world were to be endorsed on pol. at the time of issuing same. "*No proof of age is required after death*, and in case of unintentional mis-statement as to age, the pol. will not become forfeited, but an equitable proportion will be deducted from the sum assu." The prosp. did not suggest how even an "unintentional mis-statement" was to be discovered, no proof being required. Medical officers were to be immediately appointed "in all the principal towns throughout the kingdom, on the Continent, and in the Colonies." Among the Directors was the much-respected name of Lewis Pocock. The Sec. was Mr. Samuel Barrett.

In 1835 the Co., which was constituted under a D. of Sett., obtained a special Act of Parl., 5 & 6 Wm. IV. c. lxxvi.—*An Act to enable the Proprietors or Shareholders in the Argus L. Assu. Co. to sue and be sued in the name of any one of the Directors, or of the Chairman or Sec. for the time being of the said Co.* This Act recited that "whereas the public will be greatly benefited by the formation of such Co., and a considerable revenue will be derived to His Majesty therefrom, etc." The Act was not to extend to incorp. of Co., as indeed will be presently seen. A memorial of the names of the Directors, Chairman, Sec., and Proprietors, to be from time to time inrolled in the Court of Chancery. An execution upon judgment against a Director, Chairman, or Sec., may be issued against any present proprietor ; and if such execution is ineffectual, fresh execution may be issued against any former proprietor. Persons so proceeded against to be indemnified by Co. (s. 8). Indeed, the judgment was to extend to property of Co. (s. 9). [LEGISLATION FOR INS. ASSO.]

The Co. for some years transacted a comparatively small bus., and at length, in 1862, a proposal was made to amalg. it with the *Eagle*, on terms which were generally considered most advantageous to the policy and shareholders. The arrangement was stopped by the Court of Chancery on the intervention of a policy-holder. The circumstances render the case a representative one, and we therefore give the leading details.

At the period of this proposed amalg. the Co. had an ann. income of £85,000, and a prem. fund of £500,000. The D. of Sett. of the Co. contained no power to amalg. or trans. its bus. ; but it did contain power to dissolve on the recommendation of the Board, in which case the Directors were to proceed in such a manner as they should think fair

and reasonable to meet the existing engagements of the Co. So much of the funds as should not be required to meet existing engagements were to be distributed among the shareholders. The deed also provided: That two successive extraordinary general meetings, specially called for the purpose, shall have full power to make any new laws, regulations, or provisions. Also a provision that two successive extraordinary general meetings, specially called for the purpose, should have full power to come to a resolution to dissolve the Co., provided that such should have been previously recommended by the Board of Directors. The deed also contained a further clause (No. 107): That after a dissolution the Board should cease to grant or renew any pol. on behalf of the Co., and should proceed in such a manner as they should think fair and reasonable to meet existing engagements, and should cause so much of the funds as should not be required to meet existing engagements to be distributed among the proprietors.

Before the agreement with the *Eagle* was complete, but in contemplation of it, two general meetings were held, and a clause was added to the deed:

That an extraordinary general meeting, specially called for that purpose, should have full power, with the consent of three-fourths of the proprietors present and voting, to resolve that the bus. of the Co. should be transferred to any other Co. associated for like purposes, and to appoint a Committee of five proprietors to carry such resolution into effect.

By the agreement with the *Eagle*, the debts and liabilities and all the property of the *Argus* were to vest in the *Eagle*, who were to pay a sum of £164,000 to the *Argus* in such manner as the committee might direct; and it was provided that *Argus* shares should be transmuted into *Eagle* shares, and *Argus* policy-holders have an endorsement on their policies recognizing the liability of the *Eagle*, or *Eagle* policies for the same amount; and when the policies were parti., should, after receiving profit up to the time of the trans., participate *pari passu* with the *Eagle* policy-holders afterwards. The pol. were in the usual form, providing that the funds and property of the Co. should (subject to the provisions of the deed) be liable to pay the sum assured, and that the proprietors should not be responsible beyond their shares.

Under these circumstances, a Bill was filed by a parti. policy-holder to restrain the trans., and for a perpetual injunction against any similar amalg. The case came for hearing before V. C. Wood, in 1864—*Aldebert v. Leaf*. The Court considered that the only question was, whether the proposed trans. was contrary to the provisions of the deed? and was of opinion that it clearly was so, even supposing the supplementary provisions valid against the policy-holders. That although the policy-holders had no such lien as would ordinarily entitle them to interfere in the management of the Co., they were entitled to apply to the Court to stop the waste of the assets, and that the stipulation that the liabilities of the Co. should be provided for out of the funds on a dissolution was one which could not be disturbed to the detriment of any policy-holder.

Mr. Bunyon, reviewing the preceding decree, says:

It is, however, to be noted that the V. C. appeared to think that the amalg. might have been effected if the provisions of the deed had been duly followed. He observed: Even the resolution A, which purports to authorize a sale of the bus., recognizes the obligation to provide for existing policies, and it seemed to me that under that restriction the resolution might, perhaps, be considered valid as a mode of winding-up. And again: I am now dealing with a case of a policy-holder, and if the Co. had made an adequate provision for him by setting aside a proper fund, or in any other way, they might have arranged their affairs as they pleased so far as he was concerned. Handing over the whole concern to another Co. having extensive engagements of its own is not making provision for liabilities. —*Law of L. Assn.*, 2nd ed., p. 163.

In 1865 another attempt was made to amalg. the Co.—this time with the *Commercial Union*, and upon terms which would have secured to the shareholders about £47 per share return. The *Post-Mag.*, in announcing the fact (18th March, 1865), observes:

This announcement will cause surprise to many who are aware that negotiations were all but completed with a respectable legal office, whereby a larger amount per share would have been received by the shareholders. However, the Directors have doubtless good reasons for choosing the *Commercial Union*, and it is gratifying, at any rate, to find that they have at last become unanimous upon the question of amalg., and that this concern will now be disposed of without further depreciation of the shareholders' property.

In pursuance of this arrangement, a Bill was introduced to Parl. authorizing the amalg. and the dissolution of the *Argus*. This Bill came before a Select Committee of the House of Lords in 1866, Earl Cathcart being Chairman; and was rejected.

Since that period we believe no further attempts have been made at amalg. The Co. removed its offices from the City to less expensive ones in King-st., Covent Garden, and is understood to be working off its risks in a very satisfactory manner, and not seeking for new bus.

ARISTOCRACY, DURATION OF LIFE AMONG THE.—The inquiries of Dr. Guy show that while the expectation of life for males of E. and W. at 20 years of age is over 40 years, or beyond the age of 60, that of the nobility is only 38·5, and that a corresponding ratio is maintained at every succeeding decennial period. In analyzing the matter more closely, it would appear that, in point of health and longevity, the *aristocracy* fall far short of the agriculturist, and below the several professions. The cause of this is to be found, Dr. Guy thinks, in habits of self-indulgence, and the want of incentives to that exertion which tends so much to promote health and vigour. Among men of independent means

are to be found those who are given to indulgencies of the table, to excess in drinking, and to other kinds of dissipation : hence with them the inquiry into habits becomes of considerable moment. On the other hand, the wealthy classes are not harassed by the mental anxiety and bodily toil which attend the thinkers and workers of the community, and, when not addicted to those habits to which they are tempted by ample means, may be looked upon as good average lives.—*Ward's Medical Estimate*, 1857.

The opinion has been long prevalent that a distinctive marriage rate would be found to prevail among different classes of the community, and that the *aristocracy* and landed gentry would exhibit a law differing materially from that of the labouring pop. As the former are essentially the class whose rev. interests frequently involve the necessity of *Issue* pol., it seemed highly desirable that, as actuaries, we should endeavour to obtain some definite information as to the operation of that law—if indeed it should be found to exist at all.—*Archibald Day*, *Assu. Mag.*, 1862.

The preceding will sufficiently indicate the scope of the inquiry arising here. The entire subject will be followed out under head of PEERAGE, from obs. on which class most of the facts have been obtained.

ARITHMETIC.—The art of numbering, or science of number. In the ordinary and restricted acceptation of the term, however, arithmetic is the art of expressing numbers by symbols, of combining these symbols, and of applying to them the several rules of greatest practical utility. It is the foundation of the actuary's art ; but its processes are too cumbersome, and he has constantly to resort to the higher branch, as developed in ALGEBRA. Shakespeare makes Coriolanus exclaim :

“Now 'tis odds beyond arithmetic.”

In 1852 Mrs. G. R. Porter pub. *Rational Arithmetic* ; its object being to assist in rescuing arithmetic from the degraded rank it at present occupies among intellectual pursuits.

The pub. is very favourably noticed in 3rd vol. of *Assu. Mag.*

ARITHMOMETER, THE.—A calculating machine, invented by M. Thomas (de Colmar), of Paris. The machine has been in use for some years ; but improvements have been made recently. Its inventor has been awarded medals at most of the International Exhibitions from 1851 down to the present time. The instrument is in practical use in a number of Ins. Offices in the United Kingdom ; and a detailed account of its uses will be found in the *Assu. Mag.* for July, 1871. [CALCULATING MACHINES.]

ARK LIFE ASSU. SO. (No. 1.), founded in 1839, for “assu. on lives, endow., deferred, and rev. annu., etc.” Its authorized cap. was £600,000, in 12,000 shares of £50. The paid-up cap. was stated to be £60,000. The organization of the Co. was very powerful. The Marquis of Salisbury, Lord Monson, and Roland Alston, M.P., were presidents, and there were influential names among the vice-presidents and directors, many of them being designated as holding high office in the Masonic fraternity. The prosp. said :

This So. derives its orig. from members of the fraternity of Freemasonry. The usages of the order affording peculiar means of personal knowledge and confidential communication, it was thought that an inst. like the present might prove acceptable and useful to the brethren ; and in that opinion many distinguished masons have expressed their concurrence. But the So., though it has the support of some of the most eminent of the brotherhood, assumes no other name and claims no higher character than belongs to an asso. of private individuals. Neither the grand master nor the grand lodge has ever taken a part in pecuniary speculations, nor granted to any undertaking of this description authority to use a masonic title. The claims of this So. to the confidence of the brotherhood rest on the known character of its declared supporters.

But the So. is not exclusively masonic in its character. It is open to all who choose to join it, or to ins. in it. The field of enterprise in L. assu., though already much occupied, is considered to afford scope for the useful and advantageous estab. of an asso. so regulated as to unite security and reasonable terms for the assured with a fair profit to the assurers.

Some of the allusions in the preceding para. prob. had reference to the *Freemasons* and *Gen.*, which had been founded in 1838, and afterwards became the *Albert*.

The prosp. also contained the following para. : *A return of 5 p.c. will be made on the first payment of prem., and upon each subsequent payment made on or before the day appointed ; such return to be made to the party paying, whether principal or agent.*

The shareholders were to be entitled to 4 p.c. int. on cap. actually paid up, “in priority of any appropriation of profits,” and were, in add., to have *one-eighth* of the realized and divisible profits every five years.

In the outset of the scheme it had been proposed that a certain share of the profits should be appropriated to a masonic charity : “But as that proposition could only be carried into effect at the expense of the holders of pol. and shares, the present Directors thought it neither fair nor wise thus to pledge the property of others, and, therefore, this point of ‘benevolent utility’ is left, as it ought to be, to the freewill of the parties entitled to the profits.”

This change in the plan of the asso. led to or was made the pretext for some discord amongst the promoters, and to some delay in perfecting the scheme. But ultimately all preliminary difficulties were overcome, and a circular was issued, containing, amongst other things, the statement last quoted, and the following :

Ark Life Assu. Office, 83, Cornhill, 12th February, 1840.—Sir and Brother,—The Directors of the *Ark*, etc., have now completed all arrangements for carrying on that So. . . . Having surmounted the difficulties incidental to the estab. of such an inst., the Directors present their scheme to the con-

sideration of the fraternity. . . . The Directors feel constrained by a sense of justice to use this opportunity of noticing an attack made on this So. in the *Freemasons' Quarterly Review*, pub. on 30th September, 1839. . . . The ed., after apologizing for some previous encomiums on the *Ark*, etc., imputes to it, in substance, that its *orig. principles* are abandoned; that it has abandoned points of *benevolent utility*, and that its character is selfish.

When the present Directors joined this undertaking, they found it in a most precarious condition. The plan was crude, in some respects impracticable, and in others inconsistent alike with justice and prudence. Their first task was to remodel and purify the scheme. They early determined that no Director should derive any emolument from his appointment, unless or until a general meeting of the proprietors of shares and pol. should otherwise order. . . . If it was one of the "orig. principles" of the So. that Directors were to make money by their offices, there certainly has been so far an abandonment of a principle. Brother C— was connected with the So. at the time when this "orig. principle" seems to have been considered by him in force, and he appears to have been disposed to carry it out to its fullest extent. On the 2nd of March, 1839, he notified to the other members that he expected by way of remuneration £100 p.a. to increase with the progress of the asso. up to £400 p.a. as a maximum, and that should his demise take place before that of Mrs. C—, and within five years, she should receive £100 p.a. for life. This striking illustration of the "principle" met with no favour. The other members discarded the principle, and scouted the illustration; and Brother C— withdrew from the So. to indulge his disinterested indignation at *unselfishness*, and the abandonment of such an orig. principle. . . . The Directors declare that every sound and honourable principle has been maintained, and that the So., as now constituted, is adapted to the fulfilment of every purpose of good within its reach.

This manifesto was signed by Wm. Woodall, the Actuary of the Co.

What was the fate of this Co. does not seem clear. It does not appear to have been in existence at the close of 1844. It certainly could have had no sort of connexion with *Ark* (No. 2).

ARK INDISPUTABLE MUT. ASSU. SO. (called for brevity *Ark* No. 2), founded in 1852, with an authorized guarantee cap. of £100,000, in 20,000 shares of £5. The prosp. said, "The D. of Constitution of this So. is framed on the most comprehensive basis, so as to embrace every improvement in the modern practice of assu. for life or other contin." Among the "leading features" specially enumerated were (*inter alia*) the following, abbreviated considerably. (1). The guarantee cap., in order not to be a permanent burthen, might, "as soon as the bus. of the So. will permit," be paid off with a bonus of 100 p.c. (2). The whole of the profits, "after deducting the necessary per-centage for the guarantee cap.," were divisible amongst the "assurers"—meaning, we presume, the *assured*! (3). The pol. "are absolutely indisputable, and their validity cannot under any circumstances whatever be contested against the children or representatives of the assured, *except in cases of fraud*." (4). The annu. granted by the So. *increase periodically* "from a share of the profits arising in that department. *This is a feature which has been adopted by only one other asso., but as it is obviously unjust to deprive the annuitant of his legitimate share in the profit arising from the cap. to which he has contributed, the principle is embraced in this So.*" (5). Self-protecting pol. are issued "containing the advantages of an endow. at a specified age to accrue to the assu. himself, or an annu. payable during his life," etc., etc. (6). Half-credit pol. (7). Value of pol. on surrender, "through the absolute incapacity of the *assurer* (?) to continue his prems." (9). Apprentice and educational endow. granted. (10). "Pol. effected for the whole of life are trans. to other lives of not greater age, and in good health at the time of trans." (11). Amount ins. when it became a claim *might remain with So.* at int. from 4 p.c. upwards. We dare say it might! (12). "Clergymen and others can obtain advances to assist them in making repairs in parsonage houses, and other tenants on church property, and to meet the outlay for dilapidations." (13). Scheme of building so. ins. (14). "A diminution of half a year is made in the amount of prems. when persons ins. within 6 months of their last birthday," etc., etc. (20). "No extra prem. is required for persons living during time of peace in any part of the world not within 35° on either side of equator." Then in add. there was an "accident department on the mut. principle," which, except in the last particular, was a barefaced plagiarism on the *Accidental Death Co.*; and a "Savings Bank and Life Assu. Department," which simply meant a deposit branch.

Among the trustees was John Sadleir, then M.P. for Tipperary; and among the officers of the Co. many names since very well known in the ins. world.

The promoters appeared to rely upon the various features of the scheme to bring them bus., and in this respect they were, of course, disappointed. The asso. dragged on its slow existence until the year 1856, when it broke up and became a total wreck.

We have or had in our possession a prosp. of this asso. with the following Scripture quotation, employed as a motto: "But with thee will I estab. my covenant; and thou shalt enter into the ark: thou, and thy sons, and thy wife, and thy sons' wives with them." We suspect it was a bad bus. for those, and the sons and daughters of those, who did enter that ark.

ARK ASSURANCE SO. (No. 3).—This Co. was regis. in 1870, before the passing of the Life Assu. Act of that year, as the *Leviathan*, with an authorized cap. of £2000. It has recently adopted its present name, and increased its cap. to £100,000—consisting of 40,000 shares of £2 10s. The Co. is not regis. with Lim. Liability—but the art. of asso. contain a clause "limiting the liability of members in respect of pol. and other contracts to the cap. and funds of the Co. for the time being."

The prosp. tells us that the So. undertakes every description of L. assu. bus. at home and abroad. We must give a few of the "leading features" of the office. Thus, under "Ministers of Religion" :—

One of the leading objects of this So. is to extend to Ministers of Religion an advantage not at present within their reach. The marked superiority in duration of life of the Ministers of Religion over laymen in the transactions of L. Assu. is now a well-estab. fact in life statistics, a fact of which the members of the former class are fairly entitled to the benefit. This consideration has induced the directors to have special tables of prems. computed for the ins. of the lives of that large and influential body, by the eminent and well-known Actuary, A. G. Finlaison, Esq., and which enable this So. to issue pol. on terms considerably lower than can be accorded to the public at large.

Age.	£	s.	d.
20	1	12	6
25	1	16	9
30	2	2	0
35	2	8	2
40	2	15	10
45	3	6	4
50	4	1	2
55	5	0	8
60	6	6	6

The annexed is an abstract of this special scale "with profits" :

A certain number of shares are reserved "to be allotted to those members of your body who may wish to become shareholders."

Four-fifths of the profits every 5 years, apportioned on "contribution" plan. The "one-third credit" "and half-credit" plans are adopted.

The general manager of the Co. is Mr. Geo. Smythe, who was for some years connected with the *Gresham*.

ARKANSAS, INS. LAWS OF.—By law of 31st May, 1864, no ins. co., whether of that or any other State, to transact ins. bus. until deposit of 20,000 dol. of the bonds of that State with the State Treasurer. Cos. may charge 2 p.c. upon amount of prems., "in consideration of add. security and certainty afforded to citizens of Arkansas under this Act."

By law of 23rd July, 1868, Governor to appoint commissioner of public works, etc. He to be *ex officio* inspector of insurance companies. Quarterly inspection. Clerks to be employed for the purpose. Agents of cos. to make ann. returns of gross receipts on tax lists.

By law of 8th April, 1869, agents to keep enough cash in hand to pay tax to collectors (rate of tax same as on personal property generally); and in default of payment, agent prohibited from doing bus.

For general provisions relating to corps., *vide* Digest of Statutes, 1858.

ARM OF THE SEA.—A bay, road, creek, cove, port, or river, where the water, whether salt or fresh, ebbs and flows.—*Wharton's Law Lex.*

ARMISTICE.—A suspension of hostilities between belligerents.

ARMY.—The military force of a country. The conditions of ins. as regards officers of the army will be fully discussed under **MILITARY SERVICE**.

The army is divided into various branches, or services, stationed in various parts of the world; and has therefore, of late years especially, furnished material for important obs. regarding the influence of climate and locality upon health and longevity. Indeed, it may be stated, generally, that no greater or more marked instances of the rapid development of sanitary science, in relation to its influences upon human life, can be furnished, than those arising from obs. on the army. It is for the especial purpose of making the reader familiar with the more important of these results that we now take up the subject.

Aggregated bodies of men, as is known by continued obs., are peculiarly liable to outbreaks of certain diseases. Careful inquiry may determine the causes, or some of the more obvious of these. Science will generally devise a remedy—the cause being known. Pliny and Tacitus record the outbreak of scurvy in the Roman armies. We do not remember that they record the remedy adopted, if any. When we come to speak of the **NAVY**, we shall have a good deal to say on this subject of *scurvy*.

The British army appears always to have been very subject to the ravages of small-pox: probably from the peculiar incidents of barrack life. Dr. Brocklesby says that in the middle of the last century the disease carried off about 1 in 4 of those whom it attacked in the natural way in encampments and winter quarters; and that only 2 out of 9 soldiers escaped the disease. It follows then that out of 100 soldiers, only 22 would escape attack, and the same number (22 in every 100, or 22 in 88 of all attacked) *would die from this cause.*—*Dr. Guy, Public Health.*

Nothing can be more certain than that during the present century—without going further back—up to and including the Crimean war, the risk of death to the army, even while in active service, has been far greater from sickness and disease than from the other incidents of warfare. The official returns show that during the last 3 years and 5 months of the Peninsular war, and this too under the great Duke, while there died of wounds or were killed in battle 8999, there *died of disease* 24,930, or very nearly 3 to 1! During the whole campaign (1808–14) there were generally 22½ p.c. of the men absent on account of sickness!

In 1821 the *males* of the soldiers' age (20 to 40), in Gt. Brit., was found to be 1,966,664. The total pop. then being about 14,000,000. The number of persons actually inrolled in the army, navy, etc.—for we have not the returns for each branch of the service

separately—was much less than it had been. This indeed will be a convenient place to present some statistics for future reference :

1801	Pop. Gt. Brit.	10,472,048	Army, Navy, etc.	470,598
1811	Do. and Ireland.	17,907,220	„	640,500
1821	„	22,247,455	„	319,300
1831	„	24,045,315	„	277,017
1841	„	26,707,065	„	312,493
1851	Do. and Brit. Isles.	27,352,472	„	142,916
1861	„	29,030,398	„	162,021

The pop. figures are *exclusive* of the army and navy.

The proportion of the total force in arms (including army, navy, marines, and embodied militia at home and abroad) to every 100 male population of the U.K., aged 16 and under 40, was 13·6 in 1801, 14·1 in 1811, 3·8 in 1821, 3·6 in 1831, 3·6 in 1841, 3·8 in 1851, 8·9 in 1855, 9·2 in 1856, 6·1 in 1858, 6·2 in 1859, and 5·7 in 1861.

Investigations into the health of the army made in 1825, by Mr. John Finlaison, gave the following results :

There were constantly sick of the Cavalry	...	...	...	4·0204	p.c.
„	„	Infantry	...	4·9773	„
„	„	Footguards	...	4·2642	„
Average of whole army				4·478553	„

Which was more than thrice the quantum of sickness prevailing amongst the members of Friendly Sos. according to the Highland Sos. Tables. The numbers observed upon were, cavalry, 94,293; infantry, 126,513; footguards, 92,889. Total, 313,695. Years over which obs. extended, 1823 and 1824.

The mort. of the *French* army on an average of 6 years, from 1820 to 1826, amounted to 19½ per 1000 ann.; but it was supposed that this might include the deaths of corps serving in the Colonies.

The mort. in the *Prussian* army, on an average of 10 years from 1821 to 1830, was 11½/10 p. 1000 ann.; but that army was then entirely composed of young men between 20 and 25; while in the Brit. army the troops were for the most part above that age.

In 1831 Mr. Geo. Farren pub. *Rates of Mort. among the Soldiery of Gt. Brit.* The author says :

The military force of Gt. Brit., exclusive of artillery, may be estimated in round numbers at 110,000 men; of these about 5600 are commissioned officers. . . . The average age of the soldiery may be fairly taken at 26; and from twelve monthly enumerations of the numbers, excluding officers, of cavalry, footguards, and infantry, living and dying in Gt. Brit. in each of the months of the year 1827, a T. has been arranged which shows the rate of mort. of 1½ p.c. nearly; whilst the *Carlisle* rate at the age of 26 is not quite half as much. In fact, the rate among the soldiery in Gt. Brit. is equal to the rate among men of 52 at Carlisle.

It is difficult to account for this extraordinary difference, as the men are generally well selected, are well clothed and fed, their habits are subservient to the most wholesome discipline, and their exercises are favourable to health. It is a fact well worthy the consideration of those who have the direction of this splendid force, that the rates of mort. in England and Ireland differ materially both in cavalry and infantry; the rate in England being amongst cavalry 1½ p.c. p.a. or 1 in 88 nearly; and the infantry 1·85 p.c., or 1 in 54 nearly; whilst in Ireland the cavalry rate is 1½ or 1 in 59, and the infantry 2½ p.c. or 1 in 46. The foregoing remarks are applied to the soldiery and non-commissioned officers only.

Mr. Farren then follows the troops to their stations in different parts of the world, and records their mort. at those stations. We do not propose to follow him here. We shall have occasion to quote from him hereafter. Speaking of the West Indian stations, he says:

In *Jamaica*, for the 11 years ending 1829, there was an average number of men, 2524, on whom the ann. average deaths were 374. Hence ann. rate of mort. was 13½ p.c., or 1 out of 7½ living at the beginning of the year. During the same period there was an average number of officers, 122, and of women 258. The mort. of officers and women was very nearly in proportion to the numbers living of each. Combining them, there died ann. 35½ out of 380. Hence ann. rate of mort. among officers in Jamaica is 9 p.c. or 1 out of 11¼ beginning the year.

Mr. T. R. Edmonds, writing in 1832, on the connexion which exists between *sickness* and *death*, said his obs. had been made on military masses of the greatest magnitude, under the widest variety of circumstances. Two years of sickness to each death he proclaimed to be the law of nature, from which little deviation was allowed except in very unhealthy climates. This proportion had been observed to rule over the English army employed in the Peninsular war, the European troops in the East Indies, and the native troops in the East Indies. In the English army at home and inactive there were 2½ years of alleged sickness to each death. In the English West India army there was 1½ year of sickness to each death. In the East Indies, the proportion, more correctly stated, was 2½ years for the native troops, and 1½ years for the European troops.

In 1835 a Commission was appointed to inquire into the mort. of the army in our Colonies, with a view to financial objects; but in the course of that inquiry it was decided to go more minutely into the question, and to consider it as bearing upon the health of the soldiers, with a view to ameliorate their condition. The Commission consisted of Sir Alexander Tulloch, Dr. Marshall, and Dr. Balfour. Five separate reports were pub. between 1839 and 1853. That of 1839 was upon the health of the troops in the West Indies. The improvement which has resulted from the adoption of the recommendations of these reports has been most satisfactory. For instance, in Jamaica, where for 20 years

the mort. had averaged 140 p. 1000 of the strength, it was in a few years afterwards reduced to 30 p. 1000. The mort. in Ceylon, which had amounted to 75 p. 1000, had been reduced to 38 p. 1000.

In 1838 was pub., *Statistical Report on the Sickness, Mort., and Invaliding among the Troops in the West Indies*. Prepared from the Records of the Army Medical Department and War Office returns.

In June, 1838, the following return of the ages of 4866 officers in the army on full pay was obtained :

See Appendix to Report of Commissioners for Inquiring into Naval and Military Promotion (p. 298).

In 1839 Mr. Woolhouse pub *Investigation into the Mort. of the Indian Army*. This in-

Rank.	No.	Average Age.
Lieutenant-Colonels	254	47 ⁰
Majors	260	43 ⁸
Captains	1354	36
Lieutenants	1952	28 ¹² / ₁₉
Cornets, Ensigns, and Second Lieuts.	1046	21 ⁵ / ₁₀

vestigation was undertaken at the instance and for the purposes of the *National Loan Fund* Ins. So., and was based upon an *alphabetical list of the officers of the Indian army: with the dates of their respective promotion, retirement, resignation, or death, whether in India or in Europe, from the year 1760 to the year 1834 inclusive*; compiled and edited by Messrs. Dodwell and Miles, East India army agents, 69, Cornhill. We do not propose to dwell upon its contents here. [BENGAL.] [BOMBAY.] [MADRAS.]

In the same year was pub., *Statistical Reports on the Sickness, Mort., and Invalidating among the Troops in the U. K., the Mediterranean, and British America*. Prepared from the Records of the Army Medical Department and War Office returns.

In the *Journal of the Statistical Society* for this year (vol. 1), were the following papers: (1). *On Sickness and Mort. among Troops in the West Indies*, part 1, by Capt. A. M. Tulloch; ditto, parts 2 and 3. (2). *Mort. among Officers retired from the Indian Army*, by R. Christie. In vol. 2, a paper *On the Sickness and Mort. among Troops in the U. K.*, from Major Tulloch's report, by Mr. J. W. C. Lever.

In 1840 the first statistical report on the sickness and mort. of the U.S. army was pub. It covered a period of 20 years, from January, 1819, to January, 1839; and is a most instructive document. [See again 1856 and 1860.]

In the *Journal of the Statistical So.* for this same year (vol. 3), there appeared the report of a committee of that So. "appointed to collect and inquire into V. Sta. upon the sickness and mort. among European and native troops serving in the Madras Presidency, from the year 1793 to 1838." A second report by the same committee will be found in vol. 4.

In 1844 there was read before the Statistical So. of Lond. a paper by Dr. Graham Balfour: *Comparison of the Sickness, Mort., and prevailing Diseases among Seamen and Soldiers, as shown by the Naval and Military Statistical Reports*; and the same is printed in the *Journal of the So.* for 1845. In the same vol. also appears a paper by Assistant-surgeon Edward Balfour, Madras army: *Statistical Data for forming Troops, and maintaining them in health in different climates and localities*. In vol. 9 (1846) there is a short paper by Lieut.-Col. Sykes: *Mort. of the Madras Army, from official records*.

At the close of 1846, some statistics were obtained of the mort. of the French army in Algeria; and these went to show that Algiers was as fatal to the French as India to the English soldier. M. Boudin showed that the annu. mort. during the years 1837-46, was 7.58 p.c., or four times as great as the mort. (1.86 p.c. in 1842-6) in France. The mort. was as low as 4.5 in 1838, and as high as 14.1 p.c. in 1840. It varied a great deal at the different stations.

In 1847 was pub. by Dr. Graham Balfour, *Statistical Report on the Sickness and Mort. among the Troops serving in the Madras Presidency: prepared from official documents, printed by order of the Madras Government*. [MADRAS.]

In vol. 10 of the *Journal of Statistical So.* (1847), appeared the following papers: (1). *V. Sta. of the East India Co.'s Armies in India, European and Native*. The whole of the facts therein were stated to be based upon data supplied from official sources in India. (2). *On the Mort. among H.M. Troops serving in the Colonies during the years 1844 and 1845*, by Lieut.-Col. A. M. Tulloch. It especially shows the great advantage resulting from serving the troops frequently with fresh, instead of salt meat. It furnishes the only statistics we have met with regarding Hottentot soldiers. The Cape Corps, composed entirely of this class, showed a very favourable mort. result. The strength and deaths for two years under obs. were respectively as follows:

Year ending 31st March, 1845	...	...	Strength 420	...	...	Deaths 3
" " 1846	...	...	" 448	...	...	" 3

Average of these two years " 434 " 3
being at the rate of 7 p. 1000 ann. While the mort. in the same corps on an average of the 13 years antecedent to 1836 had been 12 p. 1000 annually.

The following is a return of the mort. from *disease* among the European troops in H.M. service in the East and West Indies respectively, showing the number of deaths p.c. on the whole force employed in each year from 1840 to 1848 :

Years.	East Indies.			West Indies.		
	Strength.	Deaths from Disease.	Ratio p.c. on Strength.	Strength.	Deaths from Disease.	Ratio p.c. on Strength.
1840	19,551	1,441	7.37	5,783	389	6.72
1841	21,635	1,477	6.82	5,370	530	9.86
1842	26,342	2,588	9.82	5,301	238	4.48
1843	28,047	2,154	7.67	5,246	286	5.47
1844	26,345	1,480	5.61	4,266	217	5.08
1845	26,392	2,205	8.35	4,513	216	4.78
1846	25,195	1,899	7.53	4,733	144	3.04
1847	25,356	1,165	4.59	3,550	106	2.98
1848	23,444	930	3.96	3,981	230	5.77

The deaths occurring in hospitals in consequence of wounds were not included in the above returns : of such, during the 9 years 1840-8, there were 370 in Bengal, 39 in Bombay, 2 in Madras, and 4 in the West Indies.

In 1849 were pub. *Statistical Reports on the Sickness, Mort., and Invaliding among the Troops in Western Africa, St. Helena, the Cape of Good Hope, and the Mauritius. Prepared from the Records of the Army Medical Department and War Office Returns.* We believe there are some subsequent returns of a similar character of which we have not the details at hand.

In the *Journ. of the Statistical So.*, 1849 (vol. xii.), there is a paper (read before the Statistical Section of the Brit. Asso. in 1848), by Assistant-Surgeon Edward Balfour : *Additional Obs. on the Means of Maintaining Troops in Health.* In this paper are some excellent remarks upon the influence of climate on health.

Mr. Samuel Brown, writing in 1849, with some of the details of the preceding reports before him, said :

In all the Brit. dominions the mort. amongst military men during times of peace is found to exceed that of the civil pop. between the same ages in England. This fact may, perhaps, be explained by considering that the greater part of the troops are quartered, both for convenience and military policy, in large towns and in localities in which a much greater amount of mort. will be found than the average of the country at large ; and the same causes which would affect the health of the inhabitants may be supposed to influence in some degree also that of the military men quartered amongst them.—*Thoughts on Life Ins., etc.*

The Report on the Census of 1851 gave in a more connected form than they had previously appeared in, certain valuable statistics regarding the army and navy of Gt. Brit. The information had been supplied to the Census Commissioners in the shape of returns from the War Office, the Admiralty, the Ordnance, and the Offices for Half-pay and Pensions. The following is an abstract :

The army and navy had on the 31st March, 1851,—exclusive of the East India Co.'s army and navy, and officers of the staff of the army not serving with their regiments, and militia—178,773 effective men, viz., 142,870 in the army, and 35,903 in the navy—besides 83,797 non-effectives, on half-pay or pensions : 63,305 for the army, and 20,492 for the navy. The effectives of the *army* comprised 6593 officers, 136,277 men ; and the 142,870 were composed as follows : Cavalry, 12,911 ; infantry, 115,567 ; artillery, 12,006 ; engineers, 2386. Of these there were stationed in England and Wales, 36,504 ; Scotland, 2655 ; the Islands of the Brit. Seas, 993 ; Ireland, 26,272 ; the Colonies, 44,402 ; India, 29,096 ; on the passage out and home, 2948.

Of the above numbers in the *army*, there were born in E. and W., 67,647 ; in Scotland, 15,300 ; in Ireland, 53,169 ; in the Islands of the Brit. Seas and abroad, 6754. In the *navy* (exclusive of marines) the numbers born in E. and W. were 20,125 ; Scotland, 1078 ; Ireland, 2532 ; Islands of the Brit. Seas and abroad, 1168.

The active force of the army and navy amounted to 2 p.c. of the men of Gt. Brit., or 1 in 47 ; or taking the whole pop., male and female, 1 in every 158 was engaged in purposes of warfare, or defence of the country. The *males* of the soldiers' age, 20 to 40, in Gt. Brit. in 1851 were 3,193,496. The increase from 1821 was equivalent to a vast army of more than 1,200,000 men.

The proportion of married per 100 of each class in the army was found to be, officers, 25 ; men, 15. In the navy, 30 officers and 24 seamen. But it must be here remembered that the regulations of the service set a limit on the marriages of the men, and none on the officers. The proportion of bachelors in civil life at the same date was 31 in every 100 males of the age of 20 and upwards. Among the officers in the *army* of 20 and upwards it was 71 in 100 ; among the men, 82 in 100. Among the officers in the *navy*, 60 in 100 ; among the men, 69 in 100.

In the *Journ. of Statistical So.* for 1851, appeared a paper by Lieut.-Col. W. H. Sykes : *Mort. and Chief Diseases of Troops under the Madras Government, European*

and Native, from the years 1842 to 1846 inclusive, compared with the Mort. and Chief Diseases of 1847. The author of the paper says: "I do not purpose making any comparisons between the results in the following T. and those shown in the valuable contribution to the V. statis. of the Madras army by the late Sir James Annesley. It will suffice to say that the mort. amongst the European troops is materially lessened in modern times, while that of the Native troops remains much the same."

In the same vol. (xiv.) there is a paper by Mr. Edward Balfour: *Remarks on the Abstract T. of the Men Discharged from the Military Service of the East India Co.* "A cursory examination of the causes which led to their discharge, showed that crime, disease, and a natural physical unfitness, were the chief agencies in operation."

In 1852 Lieut.-Col. Sykes read a paper before the Statistical So. of Lond. *On Mort. and Sickness of the Bombay Army, 1848-49.* "As a whole, this report of the Bombay army is the most satisfactory which has ever been received, particularly in relation to the European portion of it." This is the testimony of the author of the paper. We cannot follow him in the details; but we extract the following passage:

On the present as on former occasions I have dwelt strongly upon the remarkable healthiness of the native troops, as indicative by analogy, in the absence of returns, of the value of native life in India; and I avow that my object has been to excite the attention of assu. sos. in England to the prob. pecuniary advantages which would result from the estab. of ins. offices in India, for giving that vast body of native public servants, whose means of providing for their families are dependent on their own lives, the opportunity of securing something for their widows and children after their deaths. To give them such opportunities, would be to confer a blessing upon a highly respectable and very large class of the native community.

In 1855 there appeared in the *Assu. Mag.* some Tables, contributed by Mr. W. H. Scales, a medical officer in the East India Co.'s service, exhibiting the *Sickness and Mort. amongst the European and Native Troops of the Madras Army.* The eds. in presenting them remark, "As from the extension of L. assu. in our Indian possessions, every information of this kind is of value, we present a summary of them to our readers."—Vol. v., p. 245.

To the 16th R. of Reg.-Gen. (1856), Dr. Farr appended a paper entitled "The Great Powers," wherein much valuable information is given concerning the armies of the seven great powers of the world, viz., England, France, Turkey, Austria, Prussia, Russia, and the U.S. The number of males of the "fighting age" in each of these countries from which statistics could be obtained were stated. He points out that after the numbers of a military force are filled, they are continually reduced by—(1). Deaths from disease and from wounds. (2). The invaliding of men disabled by sickness and wounds. (3). Expiration of terms of service, where the service term is limited. (4). By desertion and losses, and the capture of prisoners by the enemy. It had been found that the ann. loss from these causes amounted to nearly 12 p.c. on the mean force. To sustain a regular army of 435,561 men under these conditions, would require 52,267 recruits p.a. He continues:

The mort. in the general pop. of England at the military age, notwithstanding the innumerable and evident defects in the sanitary arrangement of towns, and the low living of considerable numbers, is less than 1 p.c. p.a. The causes of the high mort. of the army can be exactly ascertained by investigation; and arrangements could be made for supplying all that is necessary to preserve their health, except in times of disastrous defeat. The amount of desertion and invaliding would at the same time be diminished.

He adds by way of note, "The mort. among the Dorchester labourers of the age 20-40 is less than 1 p.c.—so that luxuries are not necessary in a sanitary sense." The cost of each man in the service (army) in 1811 had been found to be about £112 p.a.; it was now (1851) about £100. Dr. Farr found that 97 out of every 100 in the Brit. army were under 40 years of age; and the proportion in the Prussian army was precisely the same.

Dr. Farr pointed out in 17th R. of Reg.-Gen. (pub. also in 1856), that it would be useful to have authentic official returns of the *deaths*, and the causes of death, in the army as well as in the civil pop.; for it would at the same time dissipate the exaggeration that always attends great losses, and enable the public to see precisely, by the diseases and the mort., the sanitary condition of the army under different circumstances.

Under the 96th art. of the *Code Napoleon*, information of the death of every French soldier is required to be sent home by the regimental authorities, and entered on the civil registers of his last-known place of residence in France. This circumstance has to be allowed for in comparing the general mort. rates of England and France.

In 1856 the 2nd report upon the sickness and mort. of the U.S. army was pub., and embraced a period of 16 years, from January, 1839, to January, 1855 (see 1840 and 1860).

Again, in the 19th Report of Reg.-Gen. (1858), it was pointed out that the names of British soldiers who die abroad are never inscribed on the national registers.

In the three years over which the *Crimean* war extended, the deaths in our army abroad were as follows:

1854	.....	Officers	231	.....	men	7152	.....	totals	7383
1855	.....	"	263	.....	"	20,052	.....	"	20,315
1856	.....	"	72	.....	"	2508	.....	"	2580

These figures do not exclusively apply to the Crimea: they extend to our entire army abroad; but the great proportion of deaths were in the Crimean war. The experiment

was tried of adding these figures to the national returns. The mort. rate for 1854 was very little affected by the add. of the numbers for that year. In 1855 the rate was increased from 2.266 p.c. to 2.312, the males being chiefly affected. In 1856 no appreciable effect was produced on the general average.

In 1857 a Royal Commission was appointed to investigate the sanitary condition of Brit. soldiers. From 1839 to 1853, a period of peace, the mort. of the infantry of the U.K. had averaged about 17 per 1000; in 1859 it was found only to average 8 per 1000. Dr. Balfour was the Sec. of this Commission, and he says, speaking of the improvement noted, "I believe that a considerable portion of it is due to the sanitary improvements consequent upon the statistical results which were brought out by our investigation." Not many years previously we had been told, on what appeared competent authority, that the mort. in the Brit. army was in time of peace 49 in 1000—that of men under 24 years of age, 24 in 1000; while among those above 40 years of age it was as high as 126 in 1000!

Barracks had not been numerous in the U.K. until about 1789. A Superintendent-General was appointed in 1793, after which many barracks were built in Lond. and several of the provincial towns. In 1858 a report was submitted to Parl. censuring the condition of many of these buildings, viz.: *Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition, the Organisation and Military Hospitals, and the Treatment of the Sick and Wounded*. It was in consequence of this report that Mr. Sydney (afterwards Lord Herbert) took up the subject, and speedily effected many improvements.

Following this Report of 1858, and taking it for his text, Dr. Guy pub. *Sanitary Condition of the Brit. Army, and especially on the want of space in Barracks*. This paper breathes strongly of that earnest philanthropy which always characterizes the productions of this learned writer. He says:

Now this report . . . brings into bold relief one great fact—one distressing and disgraceful fact—that the mort. of our soldiers, especially of the infantry, and more especially of the footguards, is very much greater than that of any class of the civil pop. with whom it seemed to be reasonable and natural and fair to compare them. And when you reflect that the army is recruited from a pop., some of whom are conscious of defects that prevent them from ever offering themselves as soldiers, and others are rejected in large numbers when they do offer; when you bear in mind, too, that great numbers of soldiers are sent back as invalids, or pensioners, to the pop. from which they were drawn, to be reckoned when they die not as soldiers, but as civilians, so as to swell the proper rate of mort. of the civil pop., and to diminish, in like proportion, that of the army, you will be able to appreciate the gravity of this statement.

We regret we cannot accompany the Doctor further, especially in his crushing proof of the deplorable deficiency of barrack accommodation.

In the same year there was pub. *Mort. of the Brit. Army at home and abroad, and during the Russian War, as compared with the Mort. of the civil pop. in England*.

In 1859 Dr. Joseph Ewart, in the Bengal Medical Service, published, *A Digest of the V. Sta. of the European and Native Armies in India; interspersed with suggestions for the eradication and mitigation of the preventible and avoidable causes of sickness and mort. amongst imported and indigenous troops*. This treatise is a most exhaustive one.

It was in this year (1859) that the Volunteer movement was set on foot. The sickness and mort. of this body is not in any way included with that of the regular army. The Volunteers numbered 14,981 in 1859, 133,342 in 1860, 176,571 in 1861, 173,318 in 1862, 178,260 in 1863, 186,334 in 1864, 194,430 in 1865, 197,511 in 1866, 204,029 in 1867.

The following is a return of the mort. amongst the *Native Troops* in the Brit. army in 1859, compiled from official sources:

Stations.	Strength.	Admissions.	Deaths.	Ratio p. 1000 in strength.	
				Admissions.	Deaths.
				p. 1000.	p. 1000.
Jamaica	807	1034	25	1281	30.95
Barbadoes	754	766	12	1016	15.9
St. Lucia	103	95	1	922	9.7
Trinidad	102	78	6	765	58.8
Brit. Guiana	301	337	2	1120	6.6
Honduras	322	274	2	851	6.2
Bahamas	322	268	13	832	40.3
Sierra Leone	356	193	5	542	14.02
Gambia	314	205	8	653	25.44
Gold Coast	279	162	7	581	25.06
Ceylon	1564	1133	16	724	10.19
China	2009	3283	109	1634	53.7

In 1860 were pub.: (1) *Army Statistical and Sanitary Report*; and (2) *Statistical Report on the Sickness and Mort. of United States Army, 1855 to 1860*. This last report is a most exhaustive one. The line of inquiry was similar in many respects to that pursued with regard to the army of Gt. Brit.

In 1861 Dr. Farr, F.R.S., read before the Brit. Asso., at Manchester, a paper *On the*

Health of the Brit. Army, and the Effects of recent Sanitary Measures on its Mort. and Sickness. Among the various Commissions appointed at the instance of the late Lord Herbert, was one for introducing improvements into the V. statis. of the army. The Commission consisted of Lord Herbert, Sir Alexander Tulloch, and Dr. Farr; and an elaborate plan was laid down for the obs., record, and analysis of the sickness, disease, and casualties of the army at home and abroad, at peace and in war. "That plan (said Dr. Farr on this occasion) is in operation; and I request your attention to some of the results deducible from the first report":

Under the new system an exact account is kept of the diseases of every soldier from the day he enters till the day he leaves the army; and the returns are so arranged as to exhibit the diseases of every regiment separately, as well as the amount of disability, invaliding, and death produced by each malady, and as far as possible by each conspicuous cause, . . . The variable sanitary state of the army is thus brought clearly before the eyes of the medical department, the commanding officers, the Commander-in-Chief, and the Sec. of State; so that evils, instantly known, can often be suppressed as they arise. The books are now made portable, and so simplified that they can be kept in the field as well as in barracks.

This is as it should be, and gives one confidence in the future statistical returns. The learned Dr.—to whom not only the army, but the entire civil pop. of this country owes so much—then details not only the steps taken at home to carry out the beneficial objects of the Commission; but also in each of the foreign stations—to be ordered to many of which, in former times, might well be regarded as equivalent to a death warrant.

It was the beneficent labours of this and the other Commissions of this period that inaugurated a new era in the sanitary condition of the Brit. army. Lord Herbert, alas! did not live to see the glory of his labours. He died in this very year, 1861. He will always be remembered as the soldier's friend.

In 1863 was pub. *Report of the Commissioners on the Sanitary State of the Army in India*—a document bristling with statistics of the greatest interest. We can only take one or two of its statements;

The deaths in the 56 years 1800-56, among all the Co.'s [E. I. Co.] non-commissioned officers and men, including invalids, in India, amounted to 40,420 out of an aggregate of 588,820 years of life, obtained by adding up the average ann. strength in those years: *so the ann. rate of mort. has been 69 in 1000 during the present century.*

The mort. rate was as high as 134 in the first Mahratta war, and it was as low as 41 in 1852. It was high again in the years of the Mutiny, and it has been subsequently lower than the Indian standard. From the rate of 55 in 1770-99, the rate rose to 85 in the 30 years 1800-29; and the mort. fell to 58 in the 27 years 1830-56; *so the death-rate of the Brit. soldier since the first occupation of the country down to the present day has oscillated round 69 p. 1000.*

In the same year (1863) Mr. James Bird, M.D., read before the Brit. Asso. a paper *On the Vital Sanitary Statistics of our European Army in India, compared with those of the French Troops under like conditions of Climate and Locality.* Many of his statistics regarding Europeans in India were drawn from the Report last mentioned. He supplies the following important T. of the mort. of the French army in hot climates (*except Algeria*), for 10 years, 1838-47, compiled from authentic sources. The ratios are p. 1000:

Years.	Martinique.	Guadeloupe.	Guiana.	Senegal.	Réunion.	Average.
1838	79·1	192·6	48·0	152·5	32·4	110·6
1839	165·2	158·8	25·0	43·1	25·5	117·4
1840	103·5	156·9	19·1	65·5	20·0	98·4
1841	102·8	129·5	39·5	75·2	84·8	98·8
1842	86·8	42·1	26·5	62·0	30·5	52·1
1843	103·2	68·9	29·8	82·5	45·5	73·3
1844	78·0	72·1	19·2	66·2	28·1	58·8
1845	53·3	45·6	19·2	41·3	13·5	38·2
1846	93·6	25·6	16·6	27·6	19·7	37·4
1847	60·3	28·0	12·5	38·9	25·5	37·2
Mean	90·4	89·0	25·3	61·7	30·5	69·5

This average it will be seen comes out at 69·5 p. 1000, which is a very remarkable circumstance. The known temperance of the French troops, taken in conjunction with the above corresponding ratio, leads to the belief that our soldiers may not have sacrificed their lives by intemperance and vicious habits while in tropical climates—a view that Dr. Edward Balfour had maintained in some of his papers already quoted.

In 1864 was passed 27 & 28 Vict., c. 85, *An Act for the better prevention of contagious diseases in certain naval and military stations.* This was the practical commencement of a movement of a most humane and beneficial tendency. It is pitiable to see a false philanthropy seeking to evade it all, and advance backwards.

In this same year Col. Sykes read before the Brit. Asso. at Newcastle, a paper: *Comparison of the Organization and Cost in Detail of the English and French Armies.* There is nothing in it directly bearing upon our present subject.

In 1865 the entire strength of the Brit. army was 208,590, of which, 4412 officers and 79,974 non-commissioned officers and men were at home, and 6155 officers and 118,049 non-commissioned officers and men abroad. The deaths of 134 officers and 3403 non-commissioned officers and men are recorded, and are thus epitomized: 34 deaths of

officers in Gt. Brit., 3 in Ireland, and 97 abroad; 713 deaths of non-commissioned officers and men in Gt. Brit., 209 in Ireland, and 2481 abroad. The rate of mort. in the army abroad during the year was, in the case of officers, 1·576 p.c., and in the case of non-commissioned officers and men, 2·102 p.c.; whereas the mort. in Gt. Brit. was, with officers, 1·007 p.c., and with non-commissioned officers and men 1·183 p.c.

The statistical report of the army medical department for the same year (1865) shows a decrease in the mort. of troops serving in the U.K., compared with the average of the six preceding years, at each quinquennial period of age, except under 20, and at ages 35 and under 40. Thus, the ann. ratio of deaths per 1000 living, exclusive of all depôts, in 1865, and in the six years 1859-64 respectively, was, under 20 years of age, 3·54 and 3·01; at 20 and under 25 years, 3·49 and 6·09; at 25-30 years, 6·75 and 8·25; at 30-35 years, 11·05 and 12·23; at 35-40 years, 17·40 and 15·61; and at 40 years of age and upwards, 14·49 and 19·65. It is also noteworthy that the ann. mort. p. 1000 living among the civil male pop. of all England, and of the healthy districts of England respectively, was, under 20 years of age, 7·41 and 5·83; at 20 and under 25 years of age, 8·42 and 7·30; at 25-30 years, 9·21 and 7·93; at 30-35 years, 10·23 and 8·36; at 35-40 years, 11·63 and 9·00; and at 40 years of age and upwards, 13·55 and 9·86. These facts illustrate the deteriorating effect of military service, for while under 30 years of age the mort. was lower than among the male civil pop. at the same ages, yet above that age it was higher, and increased with the advance of years in a much more rapid ratio than in civil life.

The strength of the Brit. army at home and abroad in 1866 was 201,641 officers and men. At home there were, on an average, in cavalry, infantry, artillery, and engineers, 4470 officers and 79,654 men, of whom 3021 officers and 53,456 men were in England and the Channel Islands. The residue of the home strength, 27,647 officers and men, were in Scotland and Ireland. The large proportion of 24,238 were stationed in the latter country. The proportions of military force in each of the three kingdoms to 10,000 civil pop. were: England and Channel Islands 26, Scotland 11, and Ireland 43. In the U.K., 49 officers and 1007 men died. The mort. of officers was 1·096 p.c.; that of the men was 1·264. Abroad there were 6252 officers and 111,265 men. The number of soldiers was less by about 15,000 than the number abroad in 1864, and less by about 7000 than the number in 1865. Seventy-nine officers and 1723 men died abroad in 1866. The mort. was remarkably low; that of officers being 1·264 p.c. against 1·576 in 1865. The mort. of men was 1·549 against 2·102 in 1865.

The strength of the Brit. army at home and abroad, in the year 1867, was 200,335—viz., at home, 87,607; abroad, 112,728. In England and the Channel Islands the strength was 60,344; in Scotland, 3517; and in Ireland, 23,746. In the total strength at home the deaths were—of officers 49, of non-commissioned officers and men 901, representing a mort. in the former of 10·95 per 1000, and in the latter of 10·84 per 1000. In Gt. Brit. the death-rate of officers was 12·55, in Ireland 6·62 p. 1000. In Gt. Brit. the death-rate of men was 12·06, in Ireland 7·54. In the total strength abroad, in 1867, the deaths were—of officers 81, of men 2203, representing a mort. of 13·33 p. 1000 in officers, and 20·66 in men.

The following particulars relate to the *Bengal* army for the same year:—The average strength of the European troops was 34,603 men. In the months of November and December 6000 were withdrawn, and in calculating the admissions and death-rates the returns of the first ten months only have been regarded. The average daily sick was 1803, or 53 per 1000. The admissions into hospital were 48,876, or an average of 1412 p. 1000, showing a favourable result in comparison with former years. The deaths were in the proportion of 30·95 p. 1000, representing a loss of life greater than any that has occurred in any year since 1861, but explained by the occurrence of an epidemic of cholera. The total deaths numbered 1071, and 479 of these were from cholera—that is, among the European troops. In the preceding year it was noticed that the ratio of deaths among cases of dysentery had been very materially reduced; that, from having been 8·60 p.c. in 1859, it had gradually, and almost without any check, fallen to 4·19 in 1866. In 1867 the results were not so favourable, since for every hundred cases treated, 5·33 died. The native enjoyed a remarkable immunity from cholera as compared with the European troops; 240 cases occurred, and 184 of the attacked died. Fevers were very rife—29,100 admissions, or 744 p. 1000; the death-rate being 3·04.

Regarding the army of the Punjab, the Sanitary Commissioner reported that the average death-rate of European troops for nine years is found by Dr. Bryden to be 55 p. 1000. Out of 522 deaths among European soldiers, no fewer than 250 were due to cholera, 37 to bowel complaints, and 39 to fever, and out of 225 deaths among the native troops, 151 were due to like causes. In the ten years from 1858 to 1867 the average mort. in the gaol was 10·54 p.c.

The reason for all this was close at hand: for we are informed by the same Report that:

The water is got chiefly from wells, which are numerous and surrounded by the most polluted soil—large cess-pits full of black offensive stuff being found within a few feet of those wells. But part of the water used by the people comes from a small canal led from the Bara river, and about eight miles long, and we are told that the water flows through the cantonment in a number of open surface channels simply scooped out of the soil, and is exposed to every species of contamination—latrines,

urinals, washhouses, stables, slaughter-houses, etc. There are no fewer than seven burial-grounds on the bank of the stream; several fresh graves were noticed within 3 ft. of the water's edge. There are, moreover, three villages on the banks of the cut, with an aggregate pop. of 1598 souls; and 37 mills are worked by the water of the stream before it enters the cantonment.

But this was not all. There being no sewerage system in the city, and a portion only of the solid excreta of the 58,000 inhabitants being removed, a large part of it, and all the liquid excreta, soak into the soil or evaporate on its surface.

Can there be any reason, except a slight and temporary increase of cost, to prevent the whole of the European troops in India being concentrated in a few cool and healthy stations?

The Reg.-Gen. in his Report on 1867, furnished the annexed Table of the ann. rate of mort. p. 1000 amongst the officers and non-commissioned officers and men in the army abroad, in each of the years 1858-67:—

The results of the preceding labours are here shown in a truly encouraging light.

The following T. of the ann. rate of mort. p. 1000 in the *Austrian* army, for the period 1857-67, as compiled

by Dr. Ficker, presents results of a remarkable character from an English point of view:—

In 1867 was pub. by authority of Parl. a *Report on the Causes of Reduced Mort. in the French Army Serving in Algeria*. The Report was compiled by a Committee specially appointed for the purpose: the instructions to which were commendably clear and laconic:

Years.	Officers.	Non-commissioned Officers and Men.
1858	35·13	67·01
1859	21·11	33·96
1860	16·39	26·03
1861	15·74	25·67
1862	13·46	19·81
1863	15·86	16·82
1864	17·35	18·93
1865	15·76	21·02
1866	12·64	15·49
1867	13·33	20·66

Years.	Estimated Strength.	Deaths.	Ann. Rate of Mort. p. 1000.
1857	379,374	8646	22·79
1858	347,696	8577	24·67
1859	527,772	16,638	31·52
1860	384,302	11,903	30·97
1861	459,300	8763	19·08
1862	400,895	6800	16·96
1863	467,154	5811	12·44
1864	559,599	6928	12·38
1865	552,148	5261	9·53
1866	646,636	11,942	18·46
1867	615,409	4432	7·22

Earl de Grey and Ripon having reason to believe that much useful information in regard to the sanitary arrangements for troops serving in hot climates, especially in the field, might be obtained from the experience of the French army in Algeria, you will proceed to that country, and place yourselves in communication with the military authorities there, who have received instructions to render you such information and assistance as may be necessary. You will inquire into the nature and results of the sanitary arrangements referred to, and report on these—stating at the same time to what extent they will in your opinion be applicable to Her Majesty's troops serving in India and other hot climates.

The Committee consisted of four, including Dr. Sutherland and Major Ewart.

The Report on the sanitary condition of the Brit. army for 1868 furnished the following important Tables. The first shows the mort. experienced at various stations at the various ages of life, and is full of interest:

STATIONS.	Ratio of Deaths p. 1000 of strength at each period of life.					
	Under 20.	Under 25.	Under 30.	Under 35.	Under 40.	40 and upwards.
Mediterranean Commands	9·63	18·34	18·66	13·71	40·24	50·84
New Brunswick, Canada, Nova Scotia, Newfoundland	7·21	4·53	11·17	14·72	12·99	31·25
Bermuda	15·04	14·76	20·89	26·60	53·57	...
West Indies (whites) ... ..	...	2·82	12·66	4·13	37·04	...
West Indies and Western Africa (blacks)	21·74	8·41	33·21	25·51	41·24	...
Cape of Good Hope	3·01	7·29	11·03	15·65	19·69	61·23
Mauritius ... ..	...	13·07	20·66	32·47	74·07	143·85
Ceylon	8·44	23·59	35·66	7·30	53·57	...
Australasia ... ..	...	2·58	9·75	10·75	15·56	...
China and Japan ... ..	...	15·23	7·69	27·27	...	...
India	12·84	14·56	17·07	26·67	38·45	56·64

The next shows the ratio of deaths p. 1000, including all branches of the service at the following stations for this year :

Malta	16.67	Lagos and Gold Coast	25.00
Canada	95.22	St. Helena	4.75
Nova Scotia and New Brunswick	9.525	Cape of Good Hope	12.11
Newfoundland	16.66	Mauritius	27.31
Bermuda	24.86	Ceylon, white	21.89
Barbadoes	6.62	Do. black	21.4
Trinidad } White troops	6.85	Australia	13.02
St. Vincent }	17.54	New Zealand	8.32
Barbadoes } Black troops	16.31	China, white	14.97
Demerara }	31.24	Do. native and Asiatic... ..	24.6
Jamaica, white troops	7.70	Japan	14.01
Do. black troops	19.37	Straits Settlements	21.84
Bahamas	14.84	India	21.7
Honduras... ..	14.81	Bengal	22.93
Sierra Leone	31.96	Madras	23.72
Gambia	30.11	Bombay	15.48

The heavy mort. in Newfoundland, compared with Canada, Nova Scotia, and New Brunswick, is specially marked as being due to *Intemperance*. We wonder what percentage of all the deaths in the army are traceable to this one cause !

In 1868 the Provost Marshal-General of the Army of the U.S. made his final report, showing the operation of his bureau from its organization, in March, 1863, to the close of the war. The tables annexed to the report show that 280,739 officers and men lost their lives in the army. Of this number 5221 commissioned officers and 90,886 enlisted men were killed in action or died of wounds, while 2321 commissioned officers and 182,329 enlisted men died of disease, or, in some few cases, of accident. This gives 1 officer killed in action or died of wounds to every 18 enlisted men, which makes the mort. of the officers somewhat greater than that of the men, as the former constituted about 1-25th of the entire force, supposing the organizations to be full. On the other hand, not 1 officer to 90 men died of disease. Several reasons are given for this remarkable disproportion in favour of the commissioned class ; one is, "the superior *morale*, the hopefulness and elasticity of spirit which is given to a man by investing him with a commission and its accompanying authority, responsibility and chances of advancement." The disproportion between the mort. of the commissioned officers and enlisted men of coloured troops is still more noteworthy. In this branch of the service the officers lost in killed or died of wounds, 1 in about 42, while the men lost but about 1 in 66. The officers, however, show of deaths by disease a loss of only 1 in 77, while the men show the enormous proportion of nearly 1 in 7, which is by far the highest mort. from this cause exhibited in the records of the U.S. army. As the general proportion of deaths from disease among white troops was less than 1 in 17, the question came up as to whether it is an economic or philanthropic measure to employ troops who are so eminently liable to death from diseases incident upon camp life. It was stated that the loss of the regular army from desertion was 244.25 per 1000, while in the volunteers it was but 62.51. This is accounted for on the ground that the men who enlisted in the regular army, a large proportion of whom were foreigners, were far inferior in character to those furnished by the States.

In December, 1871, Dr. Graham Balfour, the head of the Statistical Branch of the Army Medical Department, read a paper before the Statistical So. on the *Comparative Health of Seamen and Soldiers as shown by the Naval and Military Statistical Reports*. We can only very briefly glance at its results : and there is the less need to do so inasmuch as the paper will prob. be printed in the *Statistical Journal*, in the vols. of which will be found many important papers on this subject. The sickness in the navy had been found greater than in the army. The mort. less. A good deal of what is termed "sickness" is the result of accidental injuries. The difference in the mort. might be explained by the difference of age in the services—the navy employing a great number of young and healthy boys. The difference in diet in the two services caused some variation in the diseases. *Delirium tremens* and epilepsy were a good deal more prevalent in the navy than in the army. The following passage bears more immediately on our present subject :

Thirty-five years ago, when public attention was first thoroughly directed to the consideration of the health of the army and of the means necessary to improve it, the mort., so far as could be ascertained from the imperfect data, amounted to at least 3 p.c. annually. On the average of five years—1865-69—it was under 1½ p.c. Taking the strength of the army, exclusive of colonial corps, from the army estimates for 1871-72, as 184,000 non-commissioned officers and men, the difference in the mort. represents a saving of above 2300 lives annually—a saving of no small importance, and representing even at the lowest estimate of the cost of production of a trained soldier, a large sum of money, which would be necessary to replace these men. It must not, however, be supposed that this money value has been all realized in a reduction of expenditure—many of the improvements referred to have been effected by means of a large outlay ; but even after making a very liberal deduction on this account, there will still remain a considerable pecuniary saving as a result of these measures. It should also be remembered that another consequence of this judicious expenditure has been to remove

some of those objections to service in the army which rendered it unpopular, increased the difficulty (and consequently the expense) of recruiting, and deterred a better class of men from joining its ranks.

Although this art. has exceeded the length orig. contemplated, it will be seen that it only furnishes so to speak the skeleton of the subject. The reader can follow it up at his leisure from the sources here indicated. [BATTLE.][MILITARY SERVICE.][NAVY.][WAR.]

ARNOLDI, HERR, founder of the *Fire Ins. Bank for Germany*, at Gotha, in 1821. [GERMANY.]

ARNOULD, SIR JOSEPH, pub. in 1848 *The Law of Marine Ins. and Average*. A very famous work; indeed, regarded by many as the very highest authority on the subject. An ed. was pub. in Boston, U.S., in 1850, with add. by J. C. Perkins. 3rd ed., by David MacLachlan, M.A., Lond., 1866, 2 vols. It is from this last that we have chiefly quoted in these pages. The author says in his preface: "Almost the whole law on the subject treated of is Judge-made law, and the value of previous decisions, as precedents, depends on the application of rather refined principles to frequently complicated states of fact."

The *American Law Journal* has thus aptly described this work:—"The student will here find within a convenient compass the learning of the continental jurist; the just and politic judgments of the first intellects in England, in Westminster Hall; and the clear and satisfactory determinations of the American commercial tribunal and judges, at once eminently scientific and practical."

ARREARS, OR ARREARAGES.—Money unpaid at the time due; the remainder due after payment of part of an account; money in the hands of an accounting party.

ARREST OF A SHIP.—Arrest is a temporary detention of a ship, and with a view to ultimately releasing it, or paying its value.—*Emerigon*.

Under pol. of Marine Ins. the underwriter is made responsible for "arrests, restraints, and detainments of all kings, princes, and people of what nation, condition, or quality soever." By the word "people" is understood to be meant, not mobs or multitudes of men, but the ruling power of the country, as, say, a republic.

An "arrest" takes place whenever the Government of the country to which a ship belongs, or any other friendly power, with the object, not of prize—for then it would be a *capture*—but with a design to restore the ship and goods, or pay the value of them to their owners, seizes the ship and goods for State purposes, either in port or at sea. Thus where a Genoese corn ship was seized at sea by Venetian cruisers, and carried for the relief of Corfu, then in a state of famine, where it was sold and paid for, it was decided by the Rota of Genoa, that this was not a capture, in respect of which the assured, who had abandoned, could recover for a total loss; but merely an arrest, or detention of princes, the object being not to make prize, but to purchase corn.—*Roccus*. In this lies the grand distinction between *arrest* and *capture*.—*Arnould*.

Cases of detention [DETENTION OF PRINCES] have arisen under circumstances causing them to be regarded as captures. These will be considered under CAPTURES. The most common form of arrest is in the shape of an *embargo*. [EMBARGO.]

An arrest, detention, or embargo, does not, like capture, break up the voyage under the charter-party, or at once put an end to the contract of affreightment; on the contrary, the voyage is still supposed to be proceeding on its former terms—the period of detention being considered as a portion of it.—*MacLachlan's Shipping*.

There appears to be no doubt that if a Brit. ship be arrested or seized by the Brit. Gov., from any State necessity, or detained in port by a Brit.-laid embargo, this is a loss for which the underwriters are liable, as a detention within the meaning of the pol. This was the dictum of Lord Alvanley in *Touteng v. Hubbard*. Such accordingly seems to have been the opinion of our Courts in a case where a Brit. ship was seized by the Brit. Gov. and converted into a fire-ship (*Green v. Young*); and in another, where such ship was seized and taken in tow by a Brit. man-of-war (*Hagedorn v. Whitmore*). In fact, says Arnould, there seems no ground of distinction in this respect, as far as concerns the liability of the underwriters, between an arrest or embargo by the home and by a foreign Gov. Accordingly, the modern French Code of Commerce has decreed that "arrest by the home Gov. after the commencement of the voyage" is a ground of abandonment (Arts. 369, 370); and the later French Jurists, especially Boulay-Paty and Estrangin [*Estrangin on Pothier*], show that it rests on precisely the same ground as an arrest by foreign powers.

It was formerly considered that a foreigner who had effected ins. in this country was debarred from claiming under the pol. in respect of a loss resulting from the arrest by his own Gov. of the property ins.; because in the eye of the law he was regarded as identified with his ruler in the commission of the act. But this principle is now clearly restricted to cases in which the arrest is committed with a hostile intention towards this country.—*McArthur*.

A question has been raised, whether, in case goods are seized by a friendly power or by the home Gov. for State necessities, as in the case of provisions already mentioned, the insured can recover as for a loss by arrest and detention. The better opinion seems to be, that if a price be paid for the goods, equivalent to their value for the purposes of ins.—i.e., their prime cost, together with the expenses of insuring, and loading them on board—the insured can claim nothing; if less than this, he may sue for the difference; if

no payment be made, he may recover as for a total loss.—*Valin, Pothier, Emerigon, Arnould*; and see *Aubert v. Gray*, Exchequer Chamber, 1862.

It was decided in the Court of Exchequer, 1870—*Finlay v. The Liverpool and Great Western Steam-Ship Co.*—that the “acts and restraints of princes and rulers,” mentioned in the pol. and bill of lading, have reference to the forcible interference of the State or the Gov. of a country, taking possession of property *manu forti*, and do not extend to legal proceedings conducted in a constitutional manner, nor to decisions in a Court of Law. The most recent instance of arrest in the sense here implied is that of the Germans taking the English coal-ships in a mouth of the Seine for the purpose of blockading the passage of the river, during the late Franco-German war. [CAPTURE.] [DETENTION.] [EMBARGO] [PRIZES.]

ARRESTMENT.—A process of attachment prevailing in Scotland. A judicial order is obtained, prohibiting the removal or delivery of movable property, or the payment of money held by a third party, until the satisfaction of a debt or claim due to the arrestor by the person whose property is arrested. It is equivalent to attachment in Lond. Pol. of ins. are especially liable to be subjected to arrestment. [ATTACHMENT.]

ARRET (FR.).—A judgment, decree, or sentence.

ARSENIC, SALE OF.—For the purpose of restricting the sale of arsenic and poisons of that class, the 14 Vict. c. 13 (1851) has imposed various restrictions and penalties, which we believe have had the tendency of materially lessening the number of deaths resulting from unrestricted dealings in poison—especially arsenic.

ARSON (ab ardendo or low Lat. arsis, *a burning*).—At Common Law it is the malicious and wilful burning of the house or outhouse of another man.

This (says Blackstone) is an offence of very great malignity, and much more pernicious to the public than simple theft, because of the terror and confusion which necessarily attend it, and also because in simple theft the thing stolen only changes its master, but still remains *in esse* for the benefit of the public: whereas, by burning, the very substance is absolutely destroyed. It is also frequently more destructive than murder itself, of which too it is often the cause: since murder, atrocious as it is, seldom extends beyond the felonious act designed; whereas fire too frequently involves in the common calamity persons unknown to the incendiary, and not intended to be hurt by him, and friends as well as enemies.

The punishment for arson was by our ancient Saxon laws, *death*; and in the reign of Edward I. this sentence was executed by a kind of *lex talionis*; for the incendiaries were burnt to death; as they were also according to Gothic constitutions. The Stat. 8 Henry VI. c. 6 (1429) made the wilful burning of houses, under some special circumstances therein mentioned, amount to the crime of high treason; but it was again reduced to an ordinary felony by the general Acts of Edward VI. and Queen Mary. Moreover, the offence of arson was denied the Benefit of Clergy by Statute 23 Henry VIII. c. 1. That statute was repealed by 1 Edward VI. c. 12; and arson was afterwards held to be ousted of Clergy, with respect to the principal offender, only by inference and deduction from the Statute 4 & 5 Ph. & M. c. 4, which expressly denied the benefit to an accessory before the fact.

There has been much other legislation on the subject, which we need not follow. The latest law thereon is by Act 24 & 25 Vict. c. 97 (1861). The provisions of the previous acts were repealed, and it is provided (s. 2), whosoever shall unlawfully and maliciously set fire to any dwelling-house, any person being therein, shall be guilty of felony, and is made liable to penal servitude for life, or not less than five years, or to imprisonment for not more than two years, with or without hard labour, or solitary confinement; and if the offender be a male under the age of sixteen, he may also be sentenced to be whipped. And the same punishments are attached (by s. 1) to the felonious offence of so setting fire to any church, chapel, or meeting-house, or other place of divine worship. And (by s. 3) provided the intent be to injure or defraud any person, to the crime of feloniously firing a house, stable, coachhouse, outhouse, warehouse, office, shop, mill, malthouse, hop-oast, barn, storehouse, granary, pens, shed, or fold; or any farm building, or building or erection used in farming land, or in carrying on any trade or manufacture, whether in possession of the offender or any other person; and (by s. 4) to the felonious offence of firing a station or other building belonging to a railway, port, dock, harbour, canal, or other navigation; or (by s. 5) any building (other than those already specified) belonging to the Queen, a county, riding, division, city, borough, poor-law union, parish or place, or to any university, or college or hall thereof, or to any inn of court, or devoted or dedicated to public use or ornament, or erected or maintained by public subscription or contribution.

As to other buildings not specified as above, the offence of so setting fire to them is somewhat less penal; being a felony punishable with penal servitude to the extent of fourteen years instead of life, or else by such imprisonment as already mentioned.

It is also enacted, that it shall be felony, and punishable as last mentioned, by any overt act to *attempt* to set fire to any building, or any matter or thing in, against or under a building, under such circumstances that if the firing were accomplished, the offence would amount to felony (secs. 7 and 8).

With regard to arson other than that of *buildings*, it is enacted that unlawfully and maliciously to set fire to any *stack* of corn, grain, pulse, tares, hay, straw, haulme, stubble, or of other cultivated vegetable produce, or stack of furze, gorse, heath, fern, turf, peat, coals, charcoal, wood, or bark, shall be equally penal as firing any of the buildings above specified (s. 17); but the punishment, if by way of penal servitude, is limited to the term of *fourteen years*, in the case of so setting fire to any *crop* of hay, grass, corn, grain or pulse, or cultivated vegetable produce, whether standing or cut down, or to any part of any wood, coppice, or plantation of trees, or to any heath, gorse, furze, or fern, where-soever the same may be growing (s. 16); and to the term of *7 years*, if the offence be *attempted* by overt act and not completed—under such circumstances that if the firing were effected the offender would be guilty of felony.

Finally to fire any *coal-mine* (s. 26) or *ship* or *vessel* (secs. 42 and 43), is made equally penal with setting fire to the buildings specified in the Act. And an attempt to do so by an overt act is also severely punished, the term of penal servitude being in that case fourteen years.

As the crime of house firing still remains a felony, it appears to us that it is within the scope of coroners to hold an inquiry in all such cases. We do not consider the coroners by any means the best persons for the purpose; but failing any special officer being appointed by legislative authority—in the U.S. they have fire marshals in all the large towns—any inquiry before the coroner would be better than none at all. The truth might be elicited, and the very dread of any inquiry would have a decidedly deterrent influence.

[CORONERS.] [FIRE PROTECTION]

ARTERIES, DISEASE OF THE.—See ANEURISM.

ARTHRITIS.—Disease of Joints (Class, LOCAL; Order, Diseases of *Organs of Locomotion*).

The deaths registered from this cause in England are few. In ten consecutive years they were as follows: 1858, 77; 1859, 81; 1860, 68; 1861, 79; 1862, 70; 1863, 73; 1864, 89; 1865, 74; 1866, 70; 1867, 75. Over a period of fifteen years ending 1864 they averaged about 4 to each million of the population living. The deaths in 1867 were: Males, 51; Females, 24. The deaths are spread over all the periods of life.

ARTHUR AVERAGE ASSO. FOR BRIT., FOREIGN, AND COLONIAL BUILT SHIPS, founded in Lond. in 1867, on the principle of mutual asso., and passed into liq. in 1870.

ARTICLES OF ASSOCIATION.—The art. of asso. in a co. regis. under the Joint-Stock Acts, 1862 and 1867, are equivalent to the D. of Sett. of a co. formed under the old Common Law system of partnership asso., and something more. They comprise and constitute the machinery by which the objects of the co. are to be carried into practical effect. They may on the one hand secure to the co. all the privileges and advantages which the laws allow; but they must not go beyond the law, or if they do, they are to that extent in-operative: and on the other hand, they determine the rights and liabilities of the shareholders as among themselves.

In the case of cos. lim. by shares, the art. of asso. need not be regis. concurrently with the MEMORANDUM OF ASSO.; nor indeed need any art. of asso. be regis. at all. Such cos. may fall back upon Table A of the Act, which contains all the more ordinary provisions for the gov. of a joint-stock co.; but we do not advise such a course. Every co., and especially every ins. co., requires the introduction of special provisions adapted to the particular circumstances of its intended bus.; and although these can afterwards be introduced by special resolution, it is at the best a clumsy and incomplete method.

Cos. regis. under the Joint-Stock Cos. Act, 1856, which had adopted Table B of that Act for their gov., in lieu of separate art. of asso., are protected by s. 206 of the Cos. Act, 1862. Table B being held as not repealed for the purposes of those cos. Table A of the Act of 1862 should be expressly excluded by cos. regis. art. of asso. for their own gov. The art. of asso. may at any, and all, times be altered by SPECIAL RESOLUTION, except when otherwise provided by the memorandum of asso.

In the case of cos. lim. by guarantee or altogether unlim., the art. of asso. must be regis. with the memorandum, in order that the whole scheme may appear concurrently. (s. 14).

The art. of asso. of every co. regis. must now be printed; and a copy thereof supplied to every member (shareholder) requiring one, for a payment not exceeding one shilling. [D. OF SETT.]

This work is not intended to be a treatise on the law of Joint-Stock Cos.; although it is part of its plan to give an intelligible outline of the main features of the law relating to ins. asso. All the leading features incident to their formation, constitution, and management, will be found under their alphabetical heads.

ARTISAN.—One who practises a mechanical art; a mechanic; a handicraftsman. By early writers called "tradesmen." Thus we have the famous work of Rammazzini *On the Diseases of Tradesmen*, of which we shall have occasion to speak more at large under DISEASES, OCCUPATIONS, etc., etc. The consideration of the diseases peculiar to different classes of artisans, has received much attention of late years; mostly from persons outside that class. Mr. H. W. Porter says (*Assu. Mag.* ix. p. 27) that numerous instances might be adduced "to show the indifference exhibited by artisans in availing

themselves of means that may be suggested by the ingenious and philanthropic for remedying the pernicious results that arise from some species of occupations." We fear this has been too true.

ARTISTS, DURATION OF LIFE AMONG.—It is generally believed that artists, adopting the usual signification of the term, viz., painters, are a long-lived class. It seems a not unnatural conclusion to arrive at, for nearly all the circumstances of their calling appear congenial to longevity. But, of course, no absolute test could be applied, unless *all* who enter upon this branch of art were placed under obs.—their ages of death being duly recorded. The same argument will apply to other professions. In perusing lists of those who have arrived at great ages, this fact has, of course, to be kept in mind. Subject to this "mental correction," the following T. of ages of great painters is furnished :

Bandinelli died aged	72	Murillo died aged	67
Bernini "	82	Raffaello "	37
Caracci, A. "	49	Rembrandt "	61
Claude "	82	Reynolds "	69
David "	76	Rubens "	63
Ghiberti "	64	Salvator Rosa "	58
Giotto "	60	Titian "	96
Guido "	67	Verrocchio "	56
Lawrence, Sir T. "	61	Veronese, Paul "	56
Michael Angelo "	96	West "	82

This list is capable of very considerable extension by those who have leisure at their command.

ARTIZAN FIRE INS. CO., LIM., founded in 1869, with an authorized cap. of £50,000, in shares of £1. Two of the regis. promoters were Mr. B. W. Jones and Mr. Elborough. We have not heard anything of the enterprise since.

ASBESTOS (derived from the Greek, and signifying *to extinguish*).—A fibrous variety of mineral, of so soft a texture that it can be spun or woven like flax; and so incombustible that it can be cleaned when dirty by burning it. It has been applied in various ways to prevent the contact of flame with inflammable goods. It appears capable of further use in this direction.

ASCENDANTS.—The progenitors of a family, as distinguished from descendants.

ASCERTAINMENT OF SURPLUS.—It is for the purpose of ascertaining the surplus of L. ins. asso. that the periodical investigations, known more generally as "bonus investigations," take place. The "ascertainment of surplus" only implies one side of the transaction: and it assumes that which may not exist. In the U.S. it is the function of the ins. superintendents, in several of the States at least, to make investigations to ascertain the *deficiency*, if any. This upon reflection will be seen to be even more important in the interest of the pol.-holders than the other process understood literally. We shall discuss the whole question at length under **BONUS**.

ASCITES.—Dropsy of the abdomen (Class, LOCAL; Order, Disease of *Digestive Organs*). The deaths from this cause in England show very little fluctuation. In ten consecutive years they were as follows:—1858, 665; 1859, 766; 1860, 750; 1861, 728; 1862, 745; 1863, 735; 1864, 719; 1865, 749; 1866, 702; 1867, 724. Over a period of fifteen years ending 1864, the deaths averaged 38 per million of the population living; for the five years ending 1864, they averaged 37.

The deaths in 1867 were: M., 275; F., 449. They are spread pretty equally over the different periods of life up to 70, and then rapidly decrease.

ASHMORE, THOMAS, pub. in 1774, *An Analysis of the several Bank Annu. from the first year of their creation to the present time; with References to the different Acts passed relative thereto. To which is added by way of supplement a correct account of the Ways and Means voted in the last sessions of Parl.*

ASHORE.—A ship is said to be ashore when she has run upon the ground, or on the sea coast, either by design or accident.—Falconer's *Universal Dict. of the Marine*.

ASIATIC CHOLERA.—See **CHOLERA**.

ASIATIC MARINE INSURANCE CO.—This Co. was founded, we believe, about the year 1850, in Calcutta, but chiefly by English connexions. It passed into winding-up a few years later; and in 1856 an order was made on the English shareholders to pay 2000 rupees p. share, equal to nearly £200.

ASPHYXIA.—Suspended animation produced by the non-conversion of the venous blood of the lungs into arterial.—*Dunghison*. [APNŒA.]

ASSESSMENT OF INS. LOSSES.—The term "assessment" of ins. losses prob. owes its orig. to the fact of an "assessor" being very generally employed for such purpose. The multiplication of terms, as the "adjustment," "apportionment" and "assessment," of losses, is apt to become confusing. The term "assessment of losses" appears to be applicable to growing crops destroyed by hail or fire; but we think for all practical purposes **ADJUSTMENT OF LOSSES** and **APPORTIONMENT OF LOSSES** will be found sufficient to cover the ground. See these heads.

ASSESSOR.—An associate, in judgment.—*Law Dict.*

ASSESSOR OF FIRE LOSSES.—The term "assessor" has prob. come to be used in the sense last indicated. The assessor is the person called in by the management to assess the damages. The objection to the multiplication of terms arises in considerable force here, for we have in common use "Adjuster," "Assessor," "Inspector," and "Surveyor," all engaged in duties very much of the same character—so much so that all the positions may be occupied by one and the same person. However, we can only deal with the designations as they arise.

The proper duty of an Assessor or Adjuster of Fire Losses is more particularly the preparation of such complex statements as those we have indicated under APPORTIONMENT OF FIRE LOSSES; and for this purpose a very special training is necessary: as special as that of average adjusters, whose profession it most resembles.

The process of assessing the amount to be paid under an ordinary fire pol., say on furniture or stock-in-trade, in case of a loss, is comparatively simple.

The basis is a written claim made and signed by the insured, giving a priced detail of the property destroyed, and it is common to require him to declare that it is true and does not include profit, etc. The pol. must be ascertained to be unvitiated and in force; and to range over the property claimed for. Items not covered must be extruded from the claim; also such as are specifically covered by another ins. and not so covered in the ins. under settlement. Evidence of the fact of the destruction of the property is required. The actual value of the property immediately prior to the fire has to be ascertained, this amount only being claimable, as the ins. is a contract of indemnity simply, and not a speculation or wager.—*Ins. Agent.*

The assessor, while he receives the definite claim from the insured, still, in the ordinary course, is paid by the office for his skill and labour. He stands in a position of trust between the insured and the insurer; and this, even though he may be on the staff of any particular co.—unless indeed the insured calls in professional aid on his own behalf, when the assessor will consider all his energies retained by the side he represents.

The pub. from which we have just quoted contained, in Feb., 1868, an excellent art. on assessors, from which we may with advantage take one or two passages:

A thoroughly efficient assessor is a valuable acquisition to a fire co. By judicious action he may save the exchequer some thousands a year, which would be sacrificed in the hands of an incompetent man. But more than this; when a fire has happened, he is the incorporation, the visible, tangible representative of the office and its line of policy. The co. is seen, and watched, and judged by his actions. If he be reckless, the co. is reckless. If he is unjust and illiberal, the co. is so in popular estimation. But if he deals with the claim honourably and fairly, taking pains to award the exact measure of the loss—no more, no less—then is the co. judged to be prudent, just, and safe.

But he has to deal with all sorts of tempers, and to contend with ignorance which is averse to being enlightened. Insurers *will* at times claim for many things not included in the policy; or, being ins. in two offices, will innocently endeavour to obtain the full amount of the loss from both; or will persist in charging, not only the value of the goods destroyed, but a handsome profit on them likewise; or inserting an item (generally by no means a small amount), for *loss of time* in getting out the fire and attending to the claim. The assessor must bring these unreasonable people to their senses—must teach them ins. law and prove to them ins. practice, and having moderated their surprise, must leave them satisfied that the co. has permitted them to sustain no loss, and has acted handsomely throughout. But this is often anything but an easy task.

Assessors are sometimes not the officers of any particular co., but act for any desiring their services. In large fires, where many cos., each having a differently worded policy, are involved, the duty of an assessor in apportioning the loss is a difficult one. A difference of a few words in a policy may make a difference of thousands of pounds in the amount which any particular office has to contribute. He has first to adjust the claim with the insurer, and watch jealously the interests of all his employers, the various cos.; and having arrived at a total, he has to allocate the amount amongst the cos. according to the amount they insure, and the specific items and the terms of their respective pol., in accordance with well understood principles agreed on by offices. An able assessor is a source of much advantage to the co. which employs him; and if his ability be so distinguished as to secure him a general reputation, his occupation is constant and sure to become lucrative.—*Ins. Agent.*

ASSETS (from the Fr. *sufficient*).—The entire property of all kinds of a co., corporate partnership, or asso.

A good deal of discussion has taken place from time to time as to what constitute the assets of an ins. asso.; or rather what items are not to be included in its assets. No positive agreement has been come to, and yet there can really be very little disagreement among practical men. It must be conceded that some of the items which may be properly regarded as assets in a "going concern," are no longer such in an undertaking which has passed, or is rapidly passing into liquidation. This more especially applies to sums expended for foundation expenses; but in some sort it applies to uncalled cap. Foundation expenses, so long as they remain undischarged, *are in every respect a liability*. When discharged, they may, to the extent which they have been judiciously incurred, rank in the representative item of "goodwill." But there is little goodwill in a concern on the point of insolvency, *and none when the concern has once stopped*. It seems but reasonable that an asso., which has expended a portion of its cap. in founding its bus., should account for a part of such expenditure by "goodwill" on the asset side of the account. Yet the only justification such an item can have must arise from one of two positions: 1. That by carrying on the bus., a sufficient return in the way of profit will be secured, *beyond the ann. int. on the outlay*, as will gradually replace the outlay. In that case the amount must be ann. or periodically reduced by the measure of that profit. 2. That if

the bus. be sold it will realize the sum at which it is stated. This latter test can only be applied under very special circumstances—and *the applying the test is to diminish the value, by shaking confidence in the concern.* As to life ins., there is another important aspect of the case which we shall discuss under GOODWILL.

Regarding the "uncalled cap.," it is clear that it can never be other than an *estimated* asset. In a solid going concern, wherein the shares will be generally held by substantial men, it will as a rule be a good asset for any sudden emergency. But in an asso. gradually passing, either by reckless management or misfortune, towards insolvency, the value of the item will become increasingly precarious, from the fact that solid men will continue to transfer their shares for such considerations as will induce less solid or speculative men to accept them. By such a process, working under the discerning influence of self-preservation, the item, by the time it is required, will be found of very little real value. A remarkable instance of this character is being developed in the case of the *European*.

Another item, regarding which much uncertainty prevails, is "Agents' Balances." The value of such an item must be governed by many considerations. In a carefully managed asso., where the agents are mostly men of good credit, and where the balances are worked up closely at stated periods, the item may be good for the amount standing in the bal. sheet—less the ordinary agency commission, and other allowances, if any. In a pushing speculative office, where the agents may be of an inferior social stamp, the item is likely to be of a more fictitious and untrustworthy character. How can any rule be made to apply to all the varying conditions of management? The item will always remain one of doubt; and the larger it is in relation to the entire income of the asso., the more doubtful it may, as a rule, be considered.

There is one rule as to this item which appears almost too obvious to require mention, and yet it *does* require mention. It is this—that inasmuch as all ins. prems. in Gt. Brit. and the U.S. (there is an exception as to marine ins. prems. in France) are payable in advance, *nothing must be considered as an agent's bal. which had not become actually payable at the time of making up the account.*

This is one of the items the treatment of which is just now engaging a good deal of the attention of the ins. departments in the U.S. We are curious to see how they will solve the difficulty—for they will solve it. [FINANCE OF L. INS.] [GOODWILL.] [SOLVENCY.]

ASSEVERATION (from the *Latin*).—To affirm earnestly; an appeal to a witness for the truth of a representation.

ASSHETON [sometimes called Asheton], Rev. Wm., D.D., Rector of Beckenham, Kent—in some works described as Rector of Middleton, Lancashire—suggested a scheme for granting annu. to the widows of clergymen and others, which was taken up by the MERCERS CO. in 1698; and which involved that Co. in considerable trouble some time later. The hist. is a very remarkable one. [MERCERS CO.]

ASSIGN (To).—Applied in various senses; generally to make over a right to another. As understood in ins. law, it is to transfer to, or make over absolutely, or conditionally, a pol. of ins. and the moneys receivable thereunder to another person.

ASSIGNABLE.—Capable of being legally assigned or made over.

ASSIGNATION.—A Scotch term, signifying anything simply ceded, yielded, or assigned to another. An alienation, transfer, or conveyance. Hence the legal instrument by which a pol. is assigned is called in Scotland an *assignment*.

ASSIGNEE.—One to whom any right or property is assigned; one who is appointed by another to do any act; one to whom some right or property is trans., or upon whom either devolves by mere operation of law. In this sense an executor is the assignee of the testator, and an administrator of the intestate.—*Burrill*. The legal maxim applicable in this case is, *assignatus utitur jure auctoris*, i.e., the assignee makes use of the right of his assignor.

ASSIGNMENT.—A transfer by one person to another of any property, real or personal, or of any estate or right therein; the instrument, or writing, by which a trans. of property is made. An assignment may be either *absolute* or *conditional*. A pol. of ins. sold outright requires an absolute assignment; whereas in the case of a pol. mortgaged, but redeemable, there is a conditional assignment. [ASSIGNMENT OF POL., STAMPS ON.]

ASSIGNMENT OF INS. POLICIES.—The rule of the Common Law has been to regard a pol. of ins. as a *chose in action*, and therefore as incapable of being assigned. [CHOSE IN ACTION.] But *custom* on the one hand, and statute law on the other, have nibbled so continuously at this fiction, that there is now not very much of it left. In add. to this, the practice of offices has to be regarded; for while the practice would be ineffective to the extent that it might be contrary to law or custom, yet within the law the variations will be quite allowable. It will be convenient to speak of the several leading classes of pol. under their respective heads.

Accident.—It is not the custom of accident ins. offices to recognize assignments of their pol., on the general principle that no man should be allowed to acquire an interest in the personal injury occurring to another. For the same reason accident offices do not, as a rule, admit one person to ins. another. The only exception should certainly be in allowing

a wife to ins. her husband, and then a clear explanation of her motive for doing so should be obtained. [LIFE OF ANOTHER.]

Cattle.—In this branch of ins. no assignment of pol. is permitted. The insured however can, on giving notice, and proof of health, etc., *substitute* a newly-purchased animal in the place of one *sold* off during the term of ins.

Fire.—The contract of F. ins. is to make good to the insured, his executors, or administrators, such loss or damage as he shall sustain upon the property specified: the word “assigns” being usually omitted.

At a comparatively early period in F. ins. practice, 1728, the case of *Lynch v. Dalsell* arose, wherein the obligation in the pol. was to pay and satisfy the assured, his executors, administrators, and assigns, within 15 days after any quarter-day in which he should suffer by fire, his loss, not exceeding a certain sum. He sold the property, and a fire occurring after the conveyance, the purchaser filed a bill against the office—the *Sun*. Lord Chancellor King, in delivering judgment, said:

These pol. are not ins. of the specific things mentioned to be ins., nor do such ins. attach of the reality, or in any manner go with the same as incident thereto by any conveyance or agreement, but are only special agreements with the assu. against such loss or damage as they may sustain. The party insuring must have a property at the time of the loss, or he can sustain no loss; and consequently can be entitled to no satisfaction. . . . These pol. are not in their nature assignable, nor is the interest ever intended to be trans. from one to the other without the express consent of the office. . . . Besides, the appellant's claim is at best founded on an assignment never agreed for until the person ins. had determined his int. in the pol. by parting with his whole property, and never executed until the loss had actually happened.

His Lordship thereupon dismissed the bill, and his decree was affirmed in the House of Lords. In this same case it was further decided as follows:

There is one event in which these pol. against Fire are allowed to be trans., and that is when any person dies, the pol. and interest therein shall continue to the heir, executor, or administrator respectively, to whom the property ins. shall belong: provided before any new payment be made, such heir, executor, or administrator, do procure his or her right to be indorsed on the pol. at the said office, or the prem. be paid in the name of the said heir, etc. But in all other cases there can be no assignment; and the party desiring the indemnity must have an interest in the thing ins. *at the time of the loss*.

In 1834 the case of *Saddlers Co. v. Badcock* arose, under a pol. issued by the *Hand-in-Hand*, for a term of 7 years, by a person having a term of 6½ years then to run. The obligation of the pol. was “to raise and pay out of the contribution stock the sum of £400 to the assured, her executors, administrators, and assigns, so often as the house should be burned down within the said term, unless the Directors should build the said house or put it in as good plight as before the fire.” Upon the back of the pol. was an indorsement that if the pol. was assigned, the assignment must be entered 21 days after the making thereof. After the expiration of the 6½ years, but before the expiration of the 7th year, the house was burned down. The insured then assigned the pol. for a nominal consideration to her late landlords, who tendered the pol. to the office for entry, which was refused, and who thereupon filed their bill to recover the sum ins. The case came before Lord Chancellor Hardwicke, who in his judgment said:

I am of opinion that it is necessary that the party ins. should have an interest in the property at the time of insuring, and when the fire happens. It has been said for the plaintiffs that it is in the nature of a wager laid by the ins. co., and that it does not signify to whom they pay, if lost. Now these ins. from F. have been introduced in later times, and, therefore, differ from ins. on ships, because there “interest or no interest” is almost constantly inserted; and if not inserted you cannot recover, unless you prove a property. By the first clause of their deed of incorp. the So. are to make satisfaction in case of any loss by fire. To whom or for what loss are they to make satisfaction? Why, to the person ins., and for the loss he may have sustained; for it cannot properly be called insuring the thing, for there is no possibility of doing it, and therefore, must mean ins. the person from damage. By the terms of the pol., the defendants might begin to rebuild and repair within 6 days after the fire happens. It has been truly said this gives the So. an option to pay or rebuild, and shows most manifestly that they meant to ins. upon the property of the ins., because nobody else can give them leave to lay even a brick; for another person might fancy a house of a different kind.

It was prob. the ruling in these cases which induced the F. offices to refuse to acknowledge any assignment which was not made at least with their consent. How indeed, but for such assent, could the office deal with the “moral hazard,” which in the case of F. ins. is frequently by far the greater risk to be undertaken? The rule, therefore, that a F. pol. can only be assigned with the consent of the office, must be regarded as a sound one. But there may notwithstanding be an exception to its general application.

Mr. Bunyon, reviewing the preceding cases, and indeed the entire question of assignment of F. pol., says:

When, however, a F. pol. is said to be unassignable, even in Equity, without the consent of the insurers, this distinction must be taken, viz., *that the trans. which is prohibited is that of the entire ownership*, and that the rule does not extend to forbid the creation of a mere lien; and then it is usual to add to the condition prohibiting a trans., except with such consent notified by a memorandum in the office books and indorsed on the pol., “except by way of mortgage.” Hence an ins. office settling a loss cannot be advised to disregard a notice of assignment of this nature.

Glass.—It is customary in the case of Glass ins. (generally called Plate-Glass Ins.) to allow the pol. to be assigned with the premises in which the glass is fixed or placed. But here again the office should always reserve to itself the right of assent or otherwise on account of the moral hazard.

Life.—The process of change as effected by Statutory Law has been gradual.

By the Cos. Act, 1862 (s. 15), it is provided that when a *chase in action* is assigned in a winding-up, the assignee is empowered to bring an action or proceed in his own name. Before this assignees used to sue in the name of the original holder.

The Gov. Assu. Act of 1864—27 & 28 Vict. c. 43—provides (sec. 11) that any person who shall ins. under that Act, or the 16 & 17 Vict. c. 45, for a payment to be made at death, may, after having paid prems. thereon for 5 years, assign his right and int. therein upon payment of such a fee, and on such conditions, as shall be from time to time prescribed by the Postmaster-General, under the authority of that Act. The assignee shall take the rights of the assignor both at law and in equity, including the right to sue. See 1871.

By the *Pol. of Ins. Act*, 1867—30 & 31 Vict. c. 144—it is provided (sec. 1) that any person or corp. now or hereafter becoming entitled by assignment or other derivative title to a pol. of life ins., and possessing at the time of action brought the equity to receive, and the right to give an effectual discharge to the assu. co., liable under such pol. for moneys thereby assu. or secured, shall be at liberty to sue at law in the name of such person or corp. to recover such moneys. In any action on a pol. of life ins. a defence on equitable grounds, or a reply to such defence on similar grounds, may be respectively pleaded and relied upon in the same manner and to the same extent as in any other personal action (s. 2). In order to obtain the benefit of this Act notice of assignment of the pol. to be given to the principal place of bus. of the co., “and the date on which such notice shall be received shall regulate the priority of all claims under any assignment”; and an ins. office making *bond fide* payment of any claim before notice received shall not be again liable (s. 3).

Every life pol. issued after 30th Sept. 1867, to specify the principal place of bus. of the co. (s. 4). Any such assignment may be made either by indorsement on the pol., or by a separate instrument, or in the words, “or to the effect set forth in the schedule to the Act, as follows :

“I, A. B., of etc., in consideration of, etc., do hereby assign unto C.D., of etc., his executors, administrators, and assigns, the [within] pol. of assu. granted, etc. [here describe the pol.] In witness, etc.”

Such indorsement or separate instrument to be duly stamped (s. 5). Notice of assignment to be acknowledged by ins. co. [ACKNOWLEDGMENT OF NOTICE.] A fee not exceeding 5s. may be charged by the ins. office (s. 8).

The Act not to apply to pol. issued under 16 & 17 Vict. c. 45 (Savings Banks Annu. Act, 1853); or 27 & 28 Vict. c. 43 (Gov. Assu. Act, 1864); or to any engagement for payment on death by any F. so. (s. 8).

In 1871 the Postmaster-General issued new regulations stating the mode in which a post-office life pol. may, after five years' prem. have been paid, be assigned to another person. The form of assignment is prescribed, and the assignment, duly stamped, must be registered at the post-office and a fee of 2s. 6d. paid for regis. No trust, incumbrance, or condition can be noticed.

The assignment of a pol. of assu. will carry with it, unless a contrary intention appear on the instrument by which it is affected, all the bonuses or other benefits, whether accrued or accruing to the principal sum; and the same rule will apply when the policy has been bequeathed, the legatee being entitled to the full benefit of the bonuses unless a contrary intention appear upon the will, and notwithstanding that they may far exceed the principal sum assu. [BONUS.]

The *Norwich Union* L. Office, in the year 1867, introduced a plan for settling life pols., which we shall speak of under the head of SETTLEMENT POLICIES.

Where pol. of life ins. are taken out by persons on their own lives, and are afterwards assigned for “valuable consideration”—that is either by way of deposit for a loan, or by way of sale for a specified sum of money paid down—the custom of ins. offices grants the holders of such pols. certain privileges. Thus, such pol. do not, we believe, in any existing office become *forfeited* in the event of the death of the person on whose life the pol. was effected, by *duelling*, *suicide*, or *the hand of justice*. This renders them far better security than they could otherwise possibly become; but in order to secure this advantage, proper notice of the assignment must have been given to, and registered on the books of the co.; and, if demanded, proof must be furnished that the transaction was a *bond fide* one, otherwise advantage might be taken. Such pols. are bound as to the time of paying prems., and by the regulations for foreign travel and residence in all respects as ordinary pols., except that in the event of the life ins. going beyond the prescribed limits, forfeiture is not generally enforced, provided the beneficial owner of the pol. inform the office, and pay the required extra prem. immediately on becoming aware of the fact.

The *West of England* Office formerly announced in its prosp. that it did not require notices of assignment. We believe it was (or is) the only office following that practice.

Marine.—By custom of marine ins. pols. have long been transferable with the bills of lading and by simple indorsement (the signature) of the person in whose name the pol. is granted: this person not unfrequently being the broker, and not the owner of the goods ins. The practice is loose, and in many respects unsatisfactory.

In 1838 was passed the 31 & 32 Vict. c. 86—*An Act to enable Assignees of M. Pol. to sue thereon in their own names*; called: *Pols. of Marine Assu. Act, 1868*. The assignment may be by indorsement as follows:

"I, A. B., of etc., do hereby assign unto C. D., etc., his executors, administrators, and assigns, the within pol. of assu. on the ship, freight, and the goods therein carried [or ship, or freight, or goods, as the case may be]. In witness whereof, etc." It is to be hoped the practice will by means of this Act be improved.

It will be observed that the preceding forms are each for absolute assignments. Where there is a conditional assignment only, by way of mortgage, or temporary lien, the form must be modified to meet the circumstances in each case.

The assignment of a pol. operates, when upon a sale, as a contract which equity will specifically perform, that the purchaser shall be entitled to the entire benefit of the policy; when upon a mortgage, that the lender shall be entitled to the benefit of it as a security for his advances. Settlements made upon a valuable consideration do not differ from sales, except in the fact that the settlor may retain either an ultimate or some other interest thereunder. When simply voluntary, they will be found to involve points of more than ordinary difficulty.—*Banyon*. [CONDITIONS OF INS.] [FOREIGN RESIDENCE.] [FORFEITURE.]

ASSIGNMENT OF INS. POL., STAMPS ON.—Regarding the stamps to be used on the assignment the following rule will apply. Where the assignment is *absolute*, a conveyance stamp of 10s. for each £100 of the purchase-money, which is altogether different from the sum ins., will be required. Where the purchase-money is below £100, the stamps will be according to the scale given under ANNU. POL. STAMPS. Where the assignment is by way of *mortgage* or security, then the scale of stamps will be as follows:—Sum to be repaid not exceeding £25, 8d.; exceeding £25 and not exceeding £50, 1s. 3d.; £50 and not exceeding £100, 2s. 6d.; £100 and not exceeding £150, 3s. 9d.; £150 and not exceeding £200, 5s.; £200 and not exceeding £250, 6s. 3d.; £250 and not exceeding £300, 7s. 6d.; and 2s. 6d. for each add. £100 or part of £100.

ASSIGNOR.—The person who makes an assignment, or assignation; correlative of *assignor*, sometimes called **ASSIGNER**.

ASSIGNS.—Persons to whom the property or interest described in a deed, pol. of ins. or other document, may happen at any future time to be *assigned*, either by deed, or by operation of law; assignees. Now used only in the plural, but formerly used in the singular, as synonymous with *assignee*.—*Burrill*.

ASSOCIATION.—A so. formed for a special object; a co.—*Worcester*.

ASSOCIATIONS.—Mut. Marine Ins. Clubs are always technically called "associations," to distinguish their action from that of proprietary cos.—*Hopkins*.

In these pages we use the word "associations" when we speak of ins. offices generally, because it embraces alike proprietary and mut. offices.

Most of the early ins. projects founded in Gt. Brit.—always excepting those formed between 1710 and 1720—the greater number of which may appropriately be termed "one-man" enterprises—were simple asso. or partnerships, formed in accordance with the Common Law of the land; having no special, legal, or other privileges: being governed solely by the provisions of their own D. of sett., as their art. of partnership were termed, and holding themselves together by their own common interest. Such asso. were almost powerless in the face of the many legal difficulties by which they were surrounded—a few of which we must now proceed to notice.

It is a rule of law that no action can be brought by one partner against another for money due in respect of any partnership transaction, on the ground that a Court of Law cannot in such case do complete justice, since the forms of action will not permit it to enter into such an investigation of the entire state of the partnership accounts as is necessary to ascertain the real and fair claims of the contracting parties.

Such being the rule, a call could not be enforced by action; for if brought in the name of the directors it failed, as being an action brought by one partner against another; whilst if brought in the name of the firm, it was equally unsuccessful, as the law ignored altogether the existence of such a body.

Little aid was afforded in this difficulty by recourse to Equity; for the taking of general account being a necessary preliminary to compel a partner to pay money at the suit of other partners, it followed that even if a Court of Equity would entertain a bill for an account, it would be practically impossible to expose the whole affairs of a co. to a judicial investigation in order to enforce contributions from two or three shareholders.

Secondly, with respect to the adjustment of the rights of the shareholders among themselves. The settlement of partnership disputes is the peculiar province of Courts of Equity. Those Courts, however, regarded joint-stock cos. with no less disfavour than Courts of Law. They required all the partners to be parties to a suit for dissolution, and at the same time were unwilling to take partnership accounts, or to interfere in partnership matters, unless a dissolution were the object of the suit.

A striking example of the injustice resulting from these rules of equitable procedure was afforded in 1826, in the case of *Vansandau v. Moore*. In that case a shareholder in the *British Annu. Co.*, complaining that the D. of sett. contained provisions inconsistent

with the prosp., on the faith of which he had accepted shares, filed a bill against the directors and other shareholders to have the Co. dissolved, and the proper accounts taken. Fourteen of the directors appeared and filed fourteen separate answers, with long schedules to each, and the Court held that the defendants could not be compelled to answer jointly, and that there was no reason in fact why the whole 300 shareholders might not answer separately. The result was that it became impossible to proceed with a suit in which the plaintiff, as a preliminary measure, might have had to pay for copies of 300 answers each, with a long schedule.

The effect of this case obviously was to render it impossible for individual shareholders to obtain a dissolution of the partnership, or an adjustment of the claims subsisting between themselves and their co-partners.

Similar difficulties occurred in the relations between joint-stock cos. and third parties. The law held that an action by or against a co. was defective unless all the partners were before the Court as plaintiffs or defendants. An action therefore by a co. consisting of numerous partners became an impossibility.

These inherent difficulties in the way of trading asso. generally had become intensified in the case of ins. asso. by the passing, in 1720, of the BUBBLE ACT—6 Geo. I. c. 18—of which we shall have occasion to speak at large hereafter. Hence the ins. asso. were from time to time driven to seek from Parl., in the form of special or private acts, the powers necessary for carrying on their bus. Many of these were obtained, of which we shall speak fully under LEGISLATION FOR INS. ASSO.

Mr. Thring, in his excellent work on joint-stock cos., reviewing the special legislation called in force under the circumstances stated, says :

The difficulties which gave rise to the interference of the legislature were caused by the persistence of the Courts in placing large public cos. on the same level as private partnerships, and applying to asso. consisting of numerous members, and managed by boards of directors, rules of procedure and principles of law adapted only to firms composed of a few active partners.

Mr. Bunyon, writing of these early asso. generally, says :

Being empowered neither by statute, nor by the Crown, they are formed by D. of Sett. alone, and do not differ, except in number of the shareholders, from ordinary partnerships. The D. is a covenant made between a few of the shareholders chosen as trustees for that purpose, and the others, by which each of the latter covenants with the trustees, and each of the trustees covenants with the rest of the shareholders, for the due performance of a series of articles which are thereafter specifically set forth. These art. define the objects of the Co., the duties of the directors, trustees, and auditors, and other officers; the powers of general meetings, the remedies given to the directors for breaches of covenant, the limitations under which proprietors are to hold their property in the concern, namely as regards the number of shares to be held by each member; the right of transfer, and the mode of descent of each share, and a variety of other provisions suited to the particular asso.

In 1825 the monopoly created, and the restrictions imposed by the Act of 1720, were removed by the repeal of that Act; but with the exception of two temporary measures passed respectively in 1834 and 1837, no steps were taken by the legislature to give to ins. and other asso. legal constitutions suited to their actual requirements until 1844, when there was enacted the JOINT-STOCK COS. REGIS. ACT, which led to very important results in the hist. of ins. enterprise.

It is enough for our present purposes to add that since 1844, no asso. of the old type have been founded—although many of those founded previously still exist : indeed the greater part of our most flourishing ins. institutions are in that category. Since the passing of the JOINT-STOCK COS. ACT, 1862, all newly-formed ins. asso. are compelled to regis. under it; and all the previously existing offices may regis. under it if they please to do so. [LEGISLATION FOR INS. ASSO.] [MUT. INS. ASSO.] [PROPRIETARY INS. COS.] [SPECIAL LEGISLATION.]

ASSURANCE.—A deed or instrument of conveyance. Thus *common assu.* are modes of conveyance estab. by the law of England, called *common*, because thereby every man's estate is assured to him.—*Burrill*. Sheppard, in his learned *Touchstone of Common Assurances*, first pub. 1641, while instancing directly or incidentally every description of deed or instrument coming under the title of "assu.," does not make the slightest mention of pol. of ins. The same may be said, we believe, of all the early compilers of Law Dictionaries. We have not met with one in which "assu." is used otherwise than in the sense above indicated. The early lexicographers followed the same rule. But they define *assurance* also to mean "a pledge of truth or certainty;" "ground of confidence;" while they render *assure*, "to make certain or sure." The more modern ones (see *Worcester*) say that its legal meaning is "to agree to indemnify for loss; to insure." We think it not difficult to see how the term *assurance* may have come to have its modern meaning. If we take the word *assure* in its most general signification, "to make safe," then you have *assurance* the act or process of making safe. There is, however, another assumption, and this is that we may have borrowed the name, as we adopted the practice, from abroad. It is quite remarkable how the word has preserved its identity through various languages. Thus :

France, *L'Assurance*.

Germany, *Assekuranz*, and *Versicherung*.

Holland, *Assurantie*, and *Verzekering*.

Sweden,

Denmark, } *Assicurans*.

Norway,

Italy, *Assicuranza*, *Assicurazione*, or *Sicurezza*.

Spain, *Seguro*, or *Aseguración*.

Portugal, *Segurança*, and *Seguridade*.

Russia, *Застрахование*.

The argument against this assumption must be the comparatively modern use of the word *assurance* in the sense of ins. in Gt. Brit.

In view of a suggestion we are about to offer, we propose to pass in review what has been said by English writers on the distinction between *assurance* and *insurance*.

The first writer who drew the distinction was Mr. Babbage. In his *Comparative View of the various Inst. for the Assu. of Lives*, pub. 1826, he says :

"*Assurance* is a contract dependent on the duration of life, which must either happen or fail. *Insurance* is a contract relating to any other uncertain event which may *partly* happen or *partly* fail: thus, in adjusting the price for ins. of houses and ships, regard is always had to the chance of salvage arising from partial destruction."

Dr. Farr, in 12th R. of Reg.-Gen. (1853), says :—Ins. is the operation of engaging to pay, and of paying, for a prem., a certain sum of money in the event of a loss. The word is universally written in this form ('Insurance') as applied to fire and ship ins. ; but for some years *assurance* has been commonly used in cases where life is concerned . . . But the operations in both cases are fundamentally the same ; and as *assurance* has already a distinct and appropriate meaning, the phrase 'L. ins.' is in every respect preferable to 'L. assu.'

Mr. Manley Hopkins, in his *Manual of M. Ins.* (1857), says : The words ins. and assu., *their meaning being identical*, imply a making sure or certain : or the state of being made secure.

Mr. Sharman, in his *Handy-book for Life Agents*, says : "Ins. is no doubt the proper term ; for on turning to the word 'Assurance' in Johnson, we find it has twelve separate significations assigned to it, the last and remotest of its meanings being 'Assurance.'"

A writer in the *Edinburgh Review*, in 1859, reviewing the *Ins. Guide and Hand-book*, (wherein we had endeavoured to adopt Mr. Babbage's distinction) with other works, said :

By a purely arbitrary, and not very defensible, application of the terms, "*Assurance*" is now commonly employed to designate security on lives, and "*insurance*," security against fire. The use of the word *assurance* in this sense is in truth a Gallicism, for it is thus made to convey the French, and not the English meaning of the word.

Mr. Sprague, in *Assu. Mag.* (xvi. p. 77), 1870, offers the following more extended observations :

It will be noticed that I do not accept the distinction laid down by some authors as to the use of the words *assurance* and *insurance*, by which the former is restricted to life, and the latter to fire risks. The more correct distinction I believe to be that a man *insures* the life of himself, or of some other person, or his house, or his ships, or the fidelity of his servants ; and that the office *assures* to him in each of these cases a sum of money payable in certain contingencies. Hence the office is called the *assurer*, or *assurers*, and the man the *assured* ; while we may speak of *the life assured*, or *the life insured* ; also of *the sum assured*, or *the sum insured* ; according as we take the point of view of the office or the individual. So also we may speak either of "life ins.," or of "life assu.," as for instance we may say a man believes in the duty and advantage of life ins., or that a co. finds the bus. of life assu. very profitable.

After a careful consideration of the question, we have come to the conclusion that Mr. Babbage's distinction is entirely fanciful and untenable ; and should therefore be discontinued. We believe the correct distinction to be that "*assurance*" represents the *principle* ; "*insurance*" the *practice*. In the main this would seem to harmonize to a considerable extent with the views of the writers quoted. Throughout these pages *this* is the distinction we have set up. We shall be glad to see that it finds any response on either or both sides of the Atlantic.

The principle has taken deep root in the Anglo-Saxon mind. The practice has become part of our social system—a branch of economic and financial science. It will extend in proportion as it is watched over and properly cultivated. Our American cousins are already wresting the palm of progress from our grasp. They have gone a-head with it in a manner far outstripping all former experience ; and probably at a ratio they will not be able fully to maintain. In Canada, in Australia, and in other English Colonies, the principle finds favour ; and the practice grows with the growth of the people. The Germans are next to us in their rapid adoption of Ins. in all its branches.

In the course of these pages the perfection of the principle, and the extension of the practice, will be traced with considerable detail. We purpose under the present head merely to enumerate the objects and purposes, to and for which the principle has been reduced to practice. The history and progress of each particular branch will be followed out under its proper distinctive title.

The principle of assu. has been applied to the following practical purposes—maintaining as far as possible chronological order :

1. Ins. of ships, cargoes, and freight against the perils of the sea. [MARINE INS.]
2. Ins. the life of the captain against misadventure. [CASUALTY INS.]
3. Ins. of the safety of travellers into distant countries ; and adventurers upon dangerous and difficult enterprises. [CASUALTY INS.]
4. Ins. against captivity—a branch of the preceding. [CAPTIVITY INS.]
5. Ins. of goods and merchandize sent overland, against robbers, and misadventure. [TRANSPORT INS.]
6. Ins. against loss of property by fire. [FIRE INS.]
7. Ins. of loss of profits consequent upon fires. [TRADE PROFITS, INS. OF]
8. Ins. of income arising from places of profit or trust, formerly called SERVICE INS.

9. Ins. against death of public men, in times of panic and excitement. [GAMBLING INS.]
10. Ins. of the prices of the public stocks and funds. [GUARANTEE INS.]
11. Ins. of apprentices, viz., for securing to them a capital with which to commence bus. [APPRENTICESHIP INS.]
12. Ins. of contingencies, arising in connexion with births, marriages, and burials. [BIRTH INS.] [MARRIAGE INS.] [BURIAL FUNDS.]
13. Ins. against capture of ships by an enemy. [CAPTURE.]
14. Ins. of adventurers in the success of their enterprise. [GAMBLING INS.]
15. Ins. of annuities upon lives. [ANNUITIES.]
16. Ins. of lottery tickets. [LOTTERY INS.]
17. Ins. of lives from year to year. [SHORT TERM INS.]
18. Ins. of life during its natural term. [LIFE INS.]
19. Ins. of one life against another, or others. [JOINT LIFE INS.]
20. Ins. of sums of money by way of endowment. [ENDOWMENTS.]
21. Ins. against surrender of a fortress. [INS. WAGERS.]
22. Ins. against robbery and theft. [ROBBERY INS.]
23. Ins. of health, against total disablement from any cause. [HEALTH INS.]
24. Ins. against specific infirmities, such as blindness, insanity, paralysis. [CASUALTY INS.]
25. Ins. of the lives of persons afflicted with disease—*Diseased* LIVES. [DISEASED LIVES.]
26. Ins. against issue of particular marriages. [ISSUE, INS. AGAINST.]
27. Ins. of cows. [CATTLE INS.] [COW CLUBS.]
28. Ins. of horses against death from all causes. [HORSE INS.]
29. Ins. against accidents of all kinds. [ACCIDENT INS.]
30. Ins. against railway accidents. [ACCIDENT INS.]
31. Ins. of compensation during non-fatal injury. [ACCIDENT INS.]
32. Ins. of passengers by sea and land. [MARITIME INS.]
33. Ins. of the baggage and effects of passengers. [BAGGAGE INS.]
34. Ins. on emigrants, covering the risk of voyages, localities, gold diggings, etc. [EMIGRANT INS.]
35. Ins. of parcels sent by railway. [PARCELS INS.]
36. Ins. of live stock, for the purpose of securing the farmer against the diseases and casualties to which live stock is exposed. [CATTLE INS.]
37. Ins. or guarantee of fidelity in situations of trust; such transactions being sometimes combined with life ins. [FIDELITY INS.]
38. Ins. of plate-glass windows, and windows in private dwellings. [GLASS INS.]
39. Ins. against losses by hail-storms. [HAIL INS.]
40. Ins. against defective titles, where the title, though good for holding, is unmarketable by reason only of such defects. [TITLES, INS. OF]
41. Ins. of the value of mortgaged property. [MORTGAGE INS.]
42. Ins. or guarantee of debts. [SOLVENCY INS.]
43. Ins. of dividends, and compensation from embarrassed and bankrupt estates. [DIVIDENDS, INS. OF]
44. Ins. repayment of sums borrowed from building societies on death of borrower. [BUILDING SO. INS.]
45. Ins. against collision at sea. [COLLISION, INS. AGAINST.]
46. Ins., or guarantee of rents, securing punctual payment whether the property be or be not occupied. [RENT INS.]
47. Ins. against trade losses; for the efficient prosecution of the offenders; and for the detection and prevention of crime. [TRADE PROTECTION SOCIETIES.]
48. Ins. of forests against destruction by fire. [FOREST INS.]
49. Ins. of growing crops, as vines, etc., against frost. [FROST INS.] [WEATHER INS.]
50. Ins. against dilapidations, ecclesiastical, and otherwise. [DILAPIDATION INS.]
51. Ins. against inundations. [INUNDATIONS, INS. AGAINST]
52. Ins. of racehorses under special conditions. [HORSE INS.]
53. Ins. of bodies of workmen, exposed to hazardous risk. [COLLECTIVE INS.]
54. Ins. of officers of army against war risk. [WAR RISK.]
55. Matrimonial ins., providing portions to persons who may marry, and making provision for them at a certain age if they do not marry. [MARRIAGE ENDOWMENTS.]
56. Ins. on infants, to take effect after a particular age. [ENDOWMENT INS.]
57. Ins. of steam-boilers against explosions. [STEAM BOILER INS.]
58. Ins. against colliery explosions. [COLLIERY INS.]
59. Ins. of specific compensation for specific injuries. [ACCIDENT INS.]
60. Ins. of life and against accidents, combined. [COMBINED INS.]
61. Ins. of horses against death or injury. [HORSE INS.]
62. Ins. of carriages. [CARRIAGE INS.]
63. Ins. of mortgages: so as to protect mortgagee from death of mortgagor and all other causes. [MORTGAGE INS.]
64. Ins. for repairs of houses, etc. [DILAPIDATION INS.]

ASSURANCE BANK, LIM., THE.—This project was set on foot at the close of 1868, apparently by the Directors and Managers of the *Progress*. Its authorized capital was £150,000 in 15,000 shares of £10. It was proposed to transact ordinary banking bus. ; and the art. authorized the making advances upon (*inter alia*) pol., ships, or shares of ships, bills of lading, delivery orders, warehousemen and wharfingers' certificates and notes, dock warrants, annu., rev., etc. We are not aware if the project be now in existence.

ASSURANCE CO.—By the Pol. of Assu. Act, 1867—30 & 31 Vict. c. 144—the expression “assu. co.” is declared to mean and “include every corp., asso., so., or co., now or hereafter carrying on the bus. of assu. lives or survivorships, either alone or in conjunction with any other object or objects.”

ASSURANCE EXCHANGE CO.—A project under this title was provisionally regis. in Nov., 1855. It never appears to have made further progress. Mr. Wm. Jno. Taylor was the promoter.

ASSURANCE MAGAZINE.—In 1851 was commenced the pub. of the *Assu. Mag.*, the design of which was to supply the members of the ins. and actuarial professions with information on topics having a special interest for them ; as also a medium for the interchange of ideas on questions of theoretical or practical interest. From the first it took a high position, and made its usefulness felt. It was orig. pub. quite independently of the Inst. of Act. ; but by the time it had reached its 3rd vol. it had commended itself so much to that body, that it was adopted as the organ of the Inst., and has so remained up to the present date. The successive editors of the Mag. have been,—Mr. Charles Jellicoe (for a short time Mr. Samuel Brown acted as associate editor) ; and for the last few years, Mr. T. B. Sprague, M.A.

The Mag. is pub. in quarterly parts ; six of them make a vol. The 16th vol. is now in course of pub. Many of the papers read at the Inst., but not all, appear in its pages. All those who desire to be kept *au fait* on ins. and actuarial questions must read it ; many of the essays are of great practical and historic value. The Mag. is much appreciated in the U.S. An index to the first 10 vols. has been pub. The plan of this index is as nearly as possible perfect : a matter of no small importance in a work of reference extending over many vols.

ASSURANCE UNION.—A co. under this title was projected in 1857, for carrying on the bus. of fire, life, marine, casualty, and indemnity ins. The promoter was Mr. Thomas Bradshaw, Barrister. We believe it made no progress.

ASSURANCER.—We have seen this term applied by early writers to those engaged in carrying on the bus. of ins.

ASSURANT.—A person assured ; *i.e.* insured.

ASSURE.—The following definitions are given to this word by leading authorities. To assert positively ; secure.—*Johnson*. To make sure or secure, firm, steady, certain.—*Richardson*. To make sure or certain ; to confirm ; to make certain or secure.—*Webster*. To make sure, or secure ; to insure.—*Chambers*.

We have already discussed the definition under ASSURANCE.

ASSURED.—In its ordinary sense, certain, indubitable, not doubted. In its legal sense a person *ins.*, and indemnified against certain events : as a person on whose life an ins. has been granted ; or who is the beneficial holder of a policy of marine, fire, accident, or other ins. As distinguished from *assurer*, a person granting ins. [See ASSURANCE.]

ASSURER.—One who assures, or gives assurance. One who promises to make good a loss ; an insurer—*Burrill*. An insurer against certain perils and dangers ; an underwriter ; an indemnifier.—*Wharton*. We constantly see this word used in a wrong sense—viz., in the place of “assured,” a person insured. [See ASSURANCE.]

ASTHMA (Class, LOCAL ; Order, Diseases of *respiratory organs*).—The deaths from this cause in England have in recent years shown a tendency to decrease. In ten consecutive years they were as follows : 1858, 4513 ; 1859, 4224 ; 1860, 4325 ; 1861, 3892 ; 1862, 4087 ; 1863, 3699 ; 1864, 4228 ; 1865, 3975 ; 1866, 3682 ; 1867, 3748 ; showing a variation from 234 deaths per million of population in 1858 to 182 in 1863, and 177 in 1867. Over a period of fifteen years, ending 1864, the deaths had averaged 232 per million. The deaths in 1867 were : males 2259 ; females 1489. Very few die in the early ages ; after 30 the numbers increase up to 70, and then rapidly decline.

ASYLUM FOREIGN AND DOMESTIC LIFE ASSU. CO., founded in 1824, with an authorized capital of £240,000, in 2000 shares of £120. The promoters of the Co. were Mr. Geo. Farren, and Mr. Naylor, who had in the preceding year jointly founded the *Economic*. The former became Resident-Director. The latter was the Actuary down to 1827, when some split took place. An early prosp. said :

The *Asylum* Co. confines its bus. to assu. the lives of persons going beyond the limits of Europe—predisposed to hereditary or other constitutional maladies—of delicate health—of peculiarity of form, whether natural or accidental—labouring under mania, melancholia, or any kind of chronic disease, unaccompanied with immediate danger—females in a state of pregnancy—persons engaged in unhealthy occupations—and those who from inadequate testimonials, uncertainty of date of birth, or other causes, would be subject to rejection, or an exorbitant rate of prem. at other offices.

Another prosp. amplifies some of the preceding features as follows :

The importance of life ins. to those who, in mercantile and professional pursuits, derive limited or

fluctuating incomes from personal exertions, has been universally felt and acknowledged; and if so salutary a mode of providing for families be sought by men who are *capable* of active exertion, or can promote their objects by residence in a healthy country, how much more desirable must the benefits of such a system be to those who labour under bodily infirmities, or are obliged to prosecute their efforts in climates uncongenial to their constitutions! Important as this last consideration must be to a very large portion of mankind, it is a matter of surprise that no equitable system has hitherto been formed for the protection and security of persons under such circumstances.

Naval and military men are frequently deterred from ins. their lives, as a permanent provision for their families, by the consideration that they will forfeit their pol. and prem. if they change their stations, or go into active service without permission from the ins. office; or must pay an exorbitant rate, the amount of which they will be unable to question, as the price of such permission. . . . To avert these consequences, the Directors of the *Asylum* Co. have caused calculations to be made of the risks of *all climates*, and of *active service*; and are now enabled to afford to officers generally, ins. at a moderate unfluctuating rate of prem., which will permit them to go to any service and to any part of the world, under no other restrictions than such as depend upon themselves to comply with.

Again :

Many when effecting ins. on their lives, do not contemplate the possibility of being obliged to go to hot climates, yet bus., or delicate health, may render a voyage beyond the limits of Europe absolutely necessary. On any such occasion the insured is obliged to *ask leave* to depart, of the offices in which he had opened his policy; and if he have paid many prems.—all of which he must sacrifice if he go without leave—the directors have a greater interest in refusing than in granting permission; or should they accede to his wishes, the infliction of a penalty, by an excessive demand for prem., is altogether in their own power. In the *Asylum* the terms may be agreed on at the commencement, and the party have a positive right to go beyond the limits of Europe whenever he may think fit to do so, without further trouble or delay.

The advantage of this, in case of assignment of pol., is pointed out, and the prosp. proceeds :

Persons in delicate health, of peculiar form, or suffering from the effects of tropical climates, rupture, mania, gout, asthma, or slight chronic disease, are insured at rates which are the result of accurate obs., and are, in many cases, *lower than the premiums charged by the generality of offices to persons in robust health.*

FEMALES.—As it is frequently desirable, particularly in cases of pregnancy, to keep the parties in ignorance of an assu. upon their lives, Females are not required to appear before a medical officer or a board of directors.

Healthy persons are ins. at lower rates than by any other office, and are entitled to go beyond Europe at rates calculated on correct data, paying only the European premium until they embark, and being reduced to the same scale if they return with unimpaired health.

The “alternative select life branch” so extensively paraded in the prosp. was simply giving the option of ins. at *equal* rates, or by an *ascending* or *descending* scale of prem. We have a prosp. in which the Co. is called the *Asylum Foreign and Domestic, and Alternately Select Life Office.*

The Co. was carried on entirely upon the proprietary system: no profits to policyholders—all to the shareholders every 5 years; or at least so much “as may not imprudently check the growth of the funds intended to be accumulated for the security of the assured.” It would have been well if this injunction of the prosp. had been observed; but it was not. In the first instance, but £12 p. share, or £24,000 cap. in all, was paid up. By 1834, or in 10 years, no less than £18 p. share had been added by way of bonuses: so that the proprietary cap. then stood at 60,000. The reason for this may in some measure be gleaned from the fact that in 1827 an alteration was made in the D. of Sett. by which the salary of the managing directory was made progressive from £600 p.a. up to £2400, partly by fixed ann. add., and partly by others dependent on the amount placed to the proprietors’ fund as *profit*. The appointment of an actuary had at the same date been made *discretionary* instead of *compulsory*! The method of estimating the profits from that period was unique—“short, plausible, and utterly fallacious,” viz., the year’s payments were deducted from the year’s income, and *three-fifths* of the remainder was treated as profits, and the remaining *two-fifths* applied to the increase of the ins. fund!

By this time the proprietors’ fund had reached—by the add. of further bonuses—£60,000; the ann. salary of the managing D. had reached its maximum sum of £2400. Then, 1833 or 1834, another alteration in the deed was made, and actuarial valuations were reinstituted. In order to comply with this requirement, a clerk, Mr. Edmunds, was promoted to the title of “mathematical calculator,” with a salary of £200 p.a. This gentleman retired in 1837, and Mr. E. J. Farren, a son of the managing director, was appointed in his stead; and we believe at the same salary. From this period matters assumed a new phase.

Down to about 1840 the so-called investigations—from 1837 actual valuations—were made ann. The actuary reported at the end of each year how much was required *to be added to the life fund previously existing*. We cannot precisely trace the growth of the fund under that system. Mr. E. J. Farren’s first annu. reserve was £8104. In two later years it was respectively £11,300 and £11,456—and these two sums being add. to £83,000 previously in hand, made the fund £115,846. Yet in 1841 the entire fund hardly exceeded *one* p.c. on the sum ins. ! At the quinquennial investigations of 1845 and 1850 respectively, the sums of £66,400 and £77,689, were reported as necessary *to be added to the former funds*. We shall revert to these figures presently.

The bus. of the Co. appears to have grown rapidly. It had a West End office—its head office being on Cornhill—a branch at Liverpool; and agencies in Paris and Hamburg.

In 1847 the prosperity of the office sustained a severe shock. Its prem. income in the following year was decreased about £15,000, but the proprietors were consoled with the assurance that the liabilities of the office had become reduced in a corresponding degree. The entire funds of the Co. at that date were only £176,000 : whereas they ought to have been about £280,000 ! During the years 1847-51, the Co. paid £16,145 for surrender of pol., insuring £99,908—the surrender values averaging about 16 p.c. on the sums ins.

Matters went on until about the end of 1853, when Mr. Geo. Farren retired from the position of Managing Director, and his son was appointed his successor as Actuary and Sec. Mr. E. J. Farren attended the first board in his new capacity on the 26th July, 1854. He is said to have expressed much surprise at the way the bus. of the Co. was conducted ; and further, to have discovered that the valuations he had from time to time made had been ignored ! Put on his inquiry by these discoveries, he is further reported to have discovered that the *required* reserve of the office to meet all claims was £275,000 : whereas *only about a half of that sum was in hand—including the cap.* “Failing to induce the directors to co-operate with him in the steps he deemed necessary for the protection of the assured, and to lessen as much as possible the demands on the shareholders, he at once resigned his appointment.”

The upshot of all this was the appointment of a Committee of Investigation. One of the first acts of this Committee was the calling in of another actuary to report on the financial position of the Co. He confirmed Mr. E. J. Farren's statement of the position of the funds of the Co., and the requirements upon them. The Committee proceeded to investigate the causes of the disaster ; and it did not take them long to discover the main rock upon which the vessel had split. *The Directors stated that they had not understood that the reserves mentioned in the Actuary's reports were to be in add. to all former reserves.* They believed, for instance, that the £66,400 reported as necessary to be added to former reserves in 1845, was *all that was required to meet the outstanding ins. of about one million and a half!* What was to be said or done with men under such circumstances ? It was merely an error of judgment ! The Committee further found that the extra £500 p.a. allowed to the Directors in consequence of a West-end office had continued to be received by them, although that office had been closed in 1847 ! But this was only a small matter in the face of general disaster.

Finally, the Committee recommended an immediate call of £30 p. share, to be paid by instalments, extending over 2 years ; and it was thought there might be a further call of £5 or £10 p. share, in consequence of expenses and of the inability of some to pay their quota of the first call. The Committee expressed their belief “that £7000 p.a. could be saved in office and other expenses ; and that after allowing int. on the sum now to be paid up, at the rate of 3 p.c. p.a., about 14 or 16 years' savings would see the office safe again.”

Now if the shareholders at this time had happened to be the same as those who had held all along, and had received the large bonuses of which we have spoken, and correspondingly large dividends in add., it would have appeared no great hardship that the process of refunding should be brought into play. But this was not so. The shares had come to be looked upon as a good investment, and the orig. £12 with its bonus add. had been sold, and therefore purchased, for as much as £90 ! This investment was now to cease to yield an income, and was to involve the payment of some £30 or £40 more. In this view the matter wore a very serious aspect. But in add., the liability was really unlimited !

We do not know precisely what amount was called up beyond the £30 in the succeeding years. In June, 1857, we find it recorded that the 7th call was just made, and this was for £10—making, it was stated, £70 p. share actually paid up to that date. By this time the shareholders had endured misery enough—and it is not to be wondered that they resolved to bring the affair to a conclusion. About July, 1857, the bus. of the Co. was trans. to the *Lond. Assurance Corp.*—and it was currently reported that a further sum of £30 p. share had to be paid by way of consummating this most desirable union—so closing the affairs of one of the most remarkable of the many remarkable ins. enterprises which have been “raised” on British soil.

It only remains to be added that at an early period of the Co.'s hist., the famous Sir James Mackintosh was its Chairman ; but as he died in 1832, he could be held in no way responsible for the later management.

“**AT AND FROM.**”—These words occur in a marine ins. pol. preceding the blank space left for the insertion of the voyage. There is a great difference between an ins. “from,” and an ins. “at and from” any place. The first only attaches to, the vessel on sailing ; but the second covers also the risk in port.—*Mr. Arthur.*

When a vessel is ins. “at and from” a home port, the underwriter's risk commences immediately the ins. is effected, and continues during the whole time she remains in preparation for the voyage insured.—*Arnould.*

When a vessel is ins. “at and from” a distant port at which she is expected to arrive, the underwriter's risk commences from the moment of her arrival—the only condition being that she must be in a state of sufficient seaworthiness to enable her to lie there in reasonable security till properly repaired and equipped for the ensuing voyage.

This principle was settled in the case of *Haughton v. Empire Marine*, in the Exchequer Chamber, on appeal, February, 1866.

ATHENÆUM FIRE INS. CO., founded in 1852, with an authorized cap. of £100,000, in 1000 shares of £100, of which £25,000 was stated to be subscribed. At a later period the cap. appears to have been increased to £500,000, in 100,000 shares of £5. 5s. paid. The subs. cap. in 1855 was returned as £272,110.

Although the Co. commenced bus. on the 1st January, 1853, no balance-sheet was presented to the shareholders until May, 1855; the first general meeting of the Co. being held on the 12th May in that year. The directors' report congratulated the shareholders on "an amount of progressive success rarely, if ever, equalled at the first meeting of a body of shareholders." "The standard of the *Athenæum* has been raised in Germany, in the U.S. of America, in the Brit. Colonies, in Portugal, and in France, while at the same time our neighbouring isles have not been allowed to remain fallow. In Jersey, for instance, an effective agency has been estab. . . . In the City of Dublin a branch office has been estab. . . . In Lancashire, in the Staffordshire Potteries, in Nottingham, and in the Eastern Counties, a considerable number of the so.'s shares have been distributed amongst the class of persons most likely to be serviceable in introducing bus. . . . Local boards have been formed in various places. . . . A number of gentlemen of high commercial position in the U.S. have formed themselves into boards of reference. . . . In Canada also the greatest success has attended the so. The value of the so.'s shares as an investment has been recognized abroad as well as at home, etc., etc.

The accounts accompanying the report presented some remarkable features. The first item of expenditure was "for law charges, including preparation and regis. of D. of sett., £3133 16s. 6d.;" another item was "directors' fees, salaries of staff at chief offices and branches, English and Foreign, £3807 13s. 11d." The total of the preliminary expenses was £5716 16s. 5d., and of the working expenses £6815 8s. 5d.—together £12,532 4s. 10d. The prems. received during the same period amounted to £8849 8s. 7d., and the amount credited on cap. account was £19,567 10s. At the meeting at which the report and accounts were passed there were 13 shareholders present, of whom 12 were stated to be either directors, agents, or servants of this or its sister office. [ATHENÆUM LIFE.]

The report was speedily followed by a call upon the shareholders, in order to provide the sum of £20,000, with the view of extending the bus. *on the other side of the Atlantic*.

The Co. appears to have been intended to be worked in connexion with the *Athenæum* Life founded in the preceding year. The Rev. J. Bartlett, M.A., was the adv. chairman of both Cos. Mr. Henry Sutton, the manager of the Life Co., was a director of the Fire Co., and some of the directors were the same. Mr. Henry Salter was the manager of the F. Co., and was at one period sec. of L. Co. The offices of the Cos. were at the same address in Sackville-st. In 1854, however, the *Security* Life was founded by Mr. Salter, and most of the directors of the *Athenæum* F. became directors of that Co., even Mr. Sutton's name being for a short time included. [SECURITY LIFE.]

The first payment of F. duty made by the Co. was for the quarter ending 29th September, 1852, £27 2s. 2d. paid "on account"; for the next quarter, £17 16s. 9d. For 1853 the entire duty paid was £342 6s. 7d. For 1854 it reached £813 5s. For 1855, £909 1s. 9d.; and for three quarters of 1856, £629 2s. The Co. was generally in arrear in the payment of the duty, and so forfeited the poundage which otherwise would have been receivable for collection.

In July, 1855, the shareholders in the Manchester district convened a meeting, "Information of an extraordinary character having come to our knowledge regarding the present position of the *Athenæum* F." The meeting was held at Haslingden:

Mr. Dugdale stated to the meeting the circumstances that had induced himself and Messrs. Knowles and Cronkshaw to call the present meeting. Mr. Hayes, of Manchester, at the request of the shareholders present, attended and made a statement of certain information which had reached him respecting the condition of the so.; and Mr. Pulsford, late sec. of the *Security* L. office, who had been sent for from Lond. by the conveners of this meeting, gave a brief sketch of the hist. of the *Security*, and the proceedings of its Directors, the same gentlemen being directors of the *Athenæum* F.—*Post-Mag.*, 4th August, 1855.

Mr. J. J. Reed, the Solicitor of the Co., and one of its directors, "attended from Lond. to watch the proceedings." It was unanimously resolved: "*That in the opinion of this meeting, a thorough and impartial investigation of the affairs of the Athenæum F. Ins. So. ought immediately to take place.*" And to this end a requisition was then and there signed. The directors refused to call a meeting. The requisitionists therefore called it themselves. The meeting took place at Radley's Hotel, Lond., 15th August, 1855. The directors at the last moment adopted the meeting; and the *Post-Mag.* reporter was refused admittance.

A Committee of Investigation was appointed. Its report was presented in September. "All the books were readily produced." The Committee made out a fresh cash account, and found the totals to agree. Of the item named for law charges, etc., they found it included a "payment of £3000 in shares to the promoter." The committee were satisfied "that a very valuable bus. has been created for the so. by the exertions of its agents at home and abroad." It was clear the committee had been carefully "nursed" by the Board.

In October a further meeting of shareholders in the Manchester district was held at Accrington. There was a good deal of "plain speaking." It was stated that the £3000 was applied to the payment of 10s. p. share on 6000 shares. A Mr. Helm is reported to have said, "If Mr. Sutton has thought proper to make a present of those shares to qualify some part of the directors, we have nothing to do with that." In the end the following resolutions were passed :

That the Lancashire shareholders form themselves into a committee with a view to adopt such measures as will release them from further responsibility; and further, that as the directors declare that they have such a valuable bus., and in order to test their sincerity, they, the said directors be requested to purchase their shares, and thus release them from further liability.

That the following gentlemen constitute the above-named committee, viz., Messrs. Thomas Knowles, G. Lund, and W. Wyld, with power to call in and employ such legal and other assistance as they may deem necessary.

That in the event of the Directors of the *Athenæum F.* commencing legal proceedings against any of the shareholders in the Lancashire district, to enforce any calls beyond the deposit of 5s. p. share already made, such action be defended at the joint expense of the shareholders in the said district.

The next thing we hear of the Co. is that a new board of directors has been appointed. The new board investigated the dealings of the old board, and found there had been fictitious borrowings and lendings between this Co. and the *Athenæum L.*; also with the *Security Mut.*—which it turned out had been promoted by the manager of this Co.—and also with the directors. Next, Mr. Salter, the manager, was dismissed. He brought an action for wrongful dismissal—and lost it. His salary was £500, to increase £100 p.a. until it reached £1000. In add. he was to have a commission of 2 p.c. upon the prems. he obtained—in respect of which he said there was due to him at the time of his dismissal £598 12s. 10d. The question of this commission formed the subject of another action. The Judge ordered the matter to be referred. The award was in favour of Salter for £573 10s.—the question of salary reserved.

The next and final act—the bus. of the Co. was trans. to the *Times F.* about September, 1856.

ATHENÆUM LIFE ASSU. SO.—This Co. was first prov. regis. in 1849 by Mr. Henry Sutton. It did not, however, assume any practical shape until 1851, when it appeared completely regis., with an authorized cap. of £10,000, afterwards increased to £100,000, in shares of £1, "to be paid up in full," with power to increase to £1,000,000. The prosp. said the So. was "estab. for the assu. of the lives of authors, painters, sculptors, musicians, persons connected with every art and science, and the public generally." The dramatic element was not overlooked, for among the directors were John B. Buckstone and Benjamin Webster. The "cast" was very good. The promoter became the manager, Mr. Henry Salter was Sec., and Mr. F. G. P. Neison the Actuary. From the prosp. we take the following passages :

The projectors of this So., however, from experience and correct calculations, having discovered new principles and features in L. assu. so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the *Athenæum* must take the lead amongst those sos. which are ever on the watch to achieve new and beneficial results, from all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuit of bus. can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist, from being so fortunate as themselves; nor is it here considered fit to analyze such causes, or set right such notions. The object of this So., therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent; and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness,—it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured quality. This So. therefore wishes to open an independent course for the consideration of men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way, before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and of all that is dear to him, if overtaken by death in the midst of his project; and while L. assu. is suggested to obviate such afflicting thoughts, then the apprehension that should adverse circumstances prevent punctuality in his annu. payments, the sacrifice already incurred will have been in vain. The So. cheerfully and with confidence points to the provision it has made for such cases: help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and uninjured. . . .

It is therefore hoped, by the estab. of this So., to remove from men of letters and artists the reproach that in so many instances has attended them; to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

Under the head of "new features of this office, to which attention is particularly requested," we reach the kernel of the nut—but it is enveloped in a haze of "wordiness," from which it is almost impossible to escape by any means of condensation :

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of L. assu. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their pol. by being unable to meet the payments when they become due; and on the part of the offices it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the

reason, that by carrying out this measure to the letter, such enormous profits have arisen from it, as to become unwieldy and useless: *since the management of them engrosses such attention and trouble as to make the office careless of extending its bus.* [The italics and the note of exclamation in this case are ours.] It has also been unjust; for instead of rewarding prudence and self-sacrifice, by assisting even for a while such strenuous exertion for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which life assu. emanated. To remedy as far as possible this defect, there will be a fund instituted by the *Athenæum*, called *The Provident Fund*, to be raised by the mutual contributions of the members themselves, on the following orig. and beneficial plan.

The first 500 persons who desire to participate in this benefit will leave a tenth portion of their pol. for the purposes of this fund, which will be thus applied: 1. To the keeping up of the pol. of such members who shall previously have paid 5 ann. prems. The aid afforded by this fund for that purpose will not be continued for a longer period than 5 consecutive years, and to be returned to the So. at the convenience of the assu., with int. at the rate of 5 p.c. p.a.; or the sum advanced may be deducted with such int. from the pol. when it shall become a claim. 2. To grant small loans on the deposit of the pol. to those members who may require temporary assistance. 3. To such qualified members, who really need it, the directors will have the discretionary power of granting such an amount as will purchase in the So. an annu. not exceeding £100 during the lives of themselves and widows. And 4. To divide among the surviving members at the end of 20 years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

It is also determined to provide as far as practicable a similar fund for such of the orig. shareholders as may become distressed, by applying a portion of the entire profits of the So. for such a purpose.

Then we are told, "The rates of prem. to secure these important advantages *are lower than those in many first-class offices where no such privileges exist.*" "Another important feature in connexion with this So. is that of granting pol. payable during the lifetime of the assured, in cases where long sickness or accident may prevent parties from following their avocations." [SICKNESS INS.] Then there was a scheme for granting pol. payable to holders. [BEARER POL.]

The pol. were "absolutely indisputable." Claims "paid *immediately* on satisfactory proof of death, and the exhibition of such documents as are required by law." 70 p.c. of profits to parti. pol. Diseased lives assu. on equitable terms. "Members of consumptive families assu. at equitable rates." The extra prems. for residence in foreign climates "are lower than in other offices, and are founded on data." To conclude, "The directors wish it emphatically to be understood that there are no privileges or advantages in this inst. in which the public do not equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co operation and support of all."

This is rather a long programme: we must now proceed to ascertain what came of it all. The first ann. meeting was held in August, 1852—322 pol. had been issued, yielding in prems. £4419 5s. 2d. The expenses were £6422 15s. 2d.; but this included £2585 16s. 7d. as preliminary. In May, 1854, we find the co. figuring in the Cheltenham County Court under circumstances which did not indicate any economy of management.

At the close of 1855 there are some signs of impecuniosity. Early in 1856 we hear of a committee "being engaged in the investigation of its affairs with a view to put an end to its misfortunes." At that time it was involved by means of re-insurance in the ins. frauds of Wm. Palmer, of Rugeley; and in the same way had an interest in the "Jodderell policies." Then comes a "call" upon the shareholders. Next it turned out that £10,000, part of the "assets" of the Co., consisted of Westminster Improvement Bonds, which had been purchased for £4500 cash, 7 debentures of £500 each, and 2000 shares in the Co., making up a nominal total of £10,000. In July an application was made to the Court of Chancery, at the instance of the directors, to wind up the Co.—the liabilities being then £28,000—assets, £10,000; query the above Bonds? Mr. Selwyn, then one of the leaders of the Chancery bar, said on behalf of some of the shareholders, "though he looked with the greatest suspicion upon any proposition coming from the directors, admitted that there was no prob. of the Co. being carried on with advantage." Order made. The then existing pol. of the Co. were trans. to the *People's Provident*, and so ultimately found their way to the *European* (No. 2). Mr. R. P. Harding wound up the Co. under the directions of the Court. Out of the proceedings of this Co. several important law cases arose, of which we propose here to give a brief outline.

In *Agar v. Athenæum* the facts were as follows: The directors had power to borrow, but only with the consent of an extraordinary general meeting of shareholders. They did borrow by issuing debentures sealed with the seal of the Co. and signed by two of themselves; and it was held that these debentures were binding on the Co., although no such authority to borrow had been conferred by a general meeting, as was contemplated by the Co.'s D. of sett.

In the case of *Prince of Wales Assu. So. v. Athenæum So.* the Court of Queen's Bench held that a pol. of ins. issued under the seal of an ins. so., and signed by three of the directors, was binding upon the so., although the issue of the pol. had not been authorized by a previous resolution of directors as required by the Co.'s deed.

In the case *Ex parte the Eagle Co.* the same principle was approved and acted upon in Chancery. In this case a claim was made against the *Athenæum So.* in respect, not of a pol. under its seal, but of an agreement to grant such a pol., entered into on behalf of the So. by its directors. The Court allowed the claim.

ATHENIANS.—The city of Athens was founded B.C. 1234. The Athenians became great in Gov.; great in commerce; great in war. We find but faint traces of their maritime

practice as bearing upon ins. See AVERAGE (MARITIME); BOTTOMRY; and MARINE INS., HIST. OF.

ATKINS, JOHN, was Resident Sec. in Lond. of *Liverpool and Lond.*, from 1860 down to his death in 1869.

ATKINS, RICHARD, sen., became Surveyor of the *Sun F.* in 1800, and continued in that position down to 1844.

ATKINS, RICHARD, jun., succeeded his father as Surveyor to the *Sun F.* from which position he retired in 1868. Mr. Atkins entered the office as a junior in 1812, so that he has had more than half a century's experience of the bus. He is still living.

In 1854 he prepared for the *Assu. Mag.* a paper: *The Stamp Duties on Contracts of Assu.* (*Assu. Mag.* iv. p. 22).

In 1866 he pub. *The Average Clause: Hints on the Settlement of Claims for Losses by Fire under mercantile policies.* The papers forming the basis of this vol. had been read before the Inst. of Act. during the years 1853-8. [AVERAGE POL.]

ATKINSON, GEORGE, pub. in 1854, *The Shipping Laws of the Brit. Empire; consisting of Park on Marine Ins., and Abbott on Shipping.* The author in his preface says:

Many years ago I resolved that I would, if spared, attempt to restore "*Park on Marine Ins.*," and "*Abbott on Shipping*," to their orig. simplicity and design. . . . To effect this I chose an early ed. of each work; which, as you know, were small 8vos., sold at a few shillings, and so simple that he who ran could read them. I have religiously kept them as they orig. were, works on general principles. . . . I have omitted no Act of Parl., nor any reported case that I know of. I have done this—where either one or the other interfered with the orig. text, there I have introduced it—not *in extenso* (a system no less derogatory to learning than injurious to the utility of a book), but analyzed, abridged, and incorp. with the text. . . . I have drawn largely upon the learning and industry found in the reports in the Admiralty Courts and in the Privy Council.

It is a very practical book.

ATLAS ASSURANCE Co., founded in 1808, F. and L.—At a meeting of gentlemen held at Will's Coffee-House, Cornhill, on the 19th Dec., 1807, a subs. was opened for forming a new proprietary Assu. Co. for F., L., and Annu.; and some of the subs. then present presented the prosp. of a plan for the estab. of the Co. The cap. proposed was £2,000,000, in 40,000 shares of £50. It was afterwards (27th April, 1808) resolved that the cap. should only be one million; but it was finally determined that it should be £1,200,000, in 24,000 shares of £50, of which £5 per share was to be paid up, viz.: 10s. at time of subs., £1 on signing deed, 30s. two months after, and £2 four months after. "The rest of the cap. to be called for only under actual necessity." The cap. might be increased by authority of a general meeting. It never has been increased.

The affairs of the Co. were to be managed by a president and 18 directors, holding 60 shares each. In 1812 the number of directors was reduced to 12. The office of president was retained until 1837. No subs. was to hold more than 60 shares. In 1820 the number was increased to 100, "and new proprietors are *not to be* entitled to receive a dividend if holding less than 10 shares." In no event was any shareholder to be accountable for any loss sustained by the Co. or its concerns beyond the amount of his share or shares, and his interest in the cap. stock. Each subs. or subsequent holder of any share "should insure with the said Co. to the amount of such share or shares, within 6 months after his admission, *or pay ann. thereto so much money as the clear profit of such ins. would amount to.*" Any person might trans. his shares, but before the transferee could be admitted a member he must execute a proper instrument, "declaring his submission to the regulations of the inst." No charge for trans. except Gov. stamps. The constitution of the Co. was only to be altered by two-thirds of the subs. at a general meeting convened for that purpose. The only clause in the prosp. declaratory of the bus. regulations of the Co. was the following:

That whenever the Co. should restore or rebuild any premises damaged by fire, and the insurer should have been deprived of rent, or have been compelled to pay rent, the same should be paid by the Co. until the premises were so restored or rebuilt, not exceeding 6 months; but if the Co. should elect to pay the amount of the damages sustained, they should allow rent for such reasonable time as that the said premises might be restored or rebuilt by the insurer, not exceeding 6 months.

This regulation continued in force until 31st January, 1860. Loss by lightning was a risk undertaken by the Co.

At this same meeting (19th December, 1807) some of the subs. were nominated a committee for effectuating the estab. of the Co. Mr. John Chalk was appointed Sec. *pro tem.* The committee determined that the subs. list should be closed 3rd May, 1808. The whole of the cap. was subs.

The subscribers met from time to time to determine upon the constitution of the Co. It was determined that the name should be "*The Atlas Assu. Co.*" It was resolved there should be a Chairman and Deputy-Chairman of the Board, and these offices were filled. Sir Christopher Baynes, Bart., was appointed Chairman. Directors were appointed; among them many persons of distinction. One of these, Mr. James Deacon Hume, was afterwards Deputy-Chairman of the Co., and became Sec. of Board of Trade. He served his country ably and well, as may be seen by an interesting life of him, by Charles Badham, M.A., pub. 1859. A Sec. was appointed, Mr. Henry Desborough, who held that office for 50 years—retiring in 1858. At a meeting, 15th May, it was resolved that "no salary ought to be taken by the Directors or Auditors of the said Co. until after a

div. should have been made to the proprietors." At a meeting, 7th June, it was resolved that the prosp. already recited should be given to the solicitor of the inst. for the purpose of preparing draft deed. The solicitor selected a then rising man at the bar to "settle" the deed, Mr. Sugden—now Lord St. Leonards—the only man connected in any way with the founding of the Co. still surviving. Mr. Ansell, whose name has been identified with the office for a very long period, only entered it at the close of 1808 as a junior.

One of the first steps the directors took was to look for a situation for a permanent office. The present site was obtained; and while the office was building, temporary offices were obtained in Bush-lane, and afterwards in Coleman-st. Bus. was commenced at No. 2, Bush-lane.

We propose to run rapidly through the deed, which bears date 1st Sept., 1808, and records of itself as follows:

And whereas this present D. of Sett. hath been framed according to the said prosp., with such alterations and add. regulations as the said directors of the said Co. have thought it expedient to make and insert in the same; and the same as it now stands hath been approved by a general meeting of proprietors of the said inst. held on the 3rd August now last past.

Clause 33 defines the objects and bus. of the So.

To make or effect assu. against loss or damage by fire on houses and other property; and also to make or effect assu. on the life or lives of any person or persons whomsoever, and on survivorships; and to make or effect all such other assu. (whether connected with F., L., or Survivorship, or not) as may be effected according to law; and also to grant, purchase, and sell annu. either for life or otherwise, and on survivorships.

A "General Court," consisting of not less than 30 members, to be held every year. An extraordinary General Court may be called on requisition by 24 members holding not less than 10 shares each, and who shall have held the same for at least twelve months preceding. Such extraordinary Court, consisting of not less than 50 members, may remove director or auditor (auditor not to hold less than 10 shares); increase cap.; amend existing regulations or make new ones (c. 48). Board meetings to be styled "Court of Directors," not less than 3 directors being present. Court to take security of Sec., agents, clerks, etc. Also to determine rates for bus. undertaken. Then the following:

67. That the Court of Directors shall cause all the pol. and annu. deeds that may be granted by the Co. to refer to the printed proposals, *and shall cause a copy of the printed proposals, so far as the same shall relate thereto, to accompany each pol. and annu. deed*; and shall cause the clause hereinafter contained against the individual responsibility of any member beyond his or her share in the cap. of the Co., or the effect thereof, to be inserted in the said pol. and annu. deeds.

Then there are specific powers to purchase annu., accept surrender of, or revive pol.; and then the following provision in case of plague, famine, etc.—a clause of a similar character being inserted in the deeds of most ins. asso. founded at that period:

71. Whenever a sudden increase of deaths shall happen in consequence of the *Plague* or any contagious or epidemic disorder, or of *Famine*, invasion or Civil War, it shall be lawful for the Court of directors to defer the payment of the whole or any part of the sum to be claimed under each and every pol. of assu. upon any life or lives or survivorship which shall expire during the prevalence of such plague, contagious or epidemic disorder, famine, invasion, or civil war, until such time as an adequate supply for the payment thereof can be obtained out of the funds of the said Co.

Then there are specific powers for increase or decrease of cap. Then powers for appointing separate classes of trustees for separate funds—as Assurance Fund; Cap. Stock, etc., Ten p.c. of the Cap. Stock (the proportion paid up) to be separately invested, "and the accumulations thereof, and the stocks and securities in and upon which the said sum and its accumulations shall for the time being be laid out and invested, and the int., div., and ann. produce thereof respectively" (c. 88). Shareholders neglecting to pay up any instalments of cap. at any time required, and to keep up ins. as required, to be subject to expulsion and forfeiture of shares. Members may find substitutes as to ins.—such substitutes to ins. for twice amount of shares; or may pay 6d. p. share p.a. by way of fine. If any member hold at any time more than 100 shares in the Co., otherwise than by marriage, "the surplus shares" shall be subject to the power of the Court of Directors hereinbefore given to compel sale thereof" (c. 157). No L. ins. to be effected by the Co. for any sum exceeding £5000; or any annu. for more than an equivalent to that sum (c. 181).

The first div. was to be declared at General Court in 1811; and thereafter ann. An extraordinary Court of Directors (not less than 7) may declare a div. Two extraordinary Courts may declare bonus, "out of the Assu. Fund for the time being of the Co., of such amount as to them shall seem just and expedient." Then the following:

204. That at the first Court of Directors after a bonus shall have been declared, the bonus so declared shall be divided into three equal parts. 205. That at the same Court of Directors one of the said three equal parts shall be added to and consolidated with the subs. cap. stock, and from part thereof. 206. That at the same Court of Directors the remaining two equal third parts of such bonus shall be distributed amongst the members of the said Co.

The F. duty collected by the Co. in 1811 was £9312 17s. 4d., being greater than that of some of the offices nearly a century its senior.

The Co. from the beginning was conducted on sound bus. principles; and an opportunity soon arose for the directors to show that they would not allow it to be imposed upon with

impunity. We have before us the notes of the trial of James Smith, on the prosecution of the *Atlas Assu. Co.*, for wilfully setting fire to his dwelling-house, No. 119, Newgate-st., on the night of the 11th November, 1812. This indictment was tried at the Sessions House in the Old Bailey, 15th January, 1813, before Sir Archibald Macdonald, Kt., Lord Chief Baron of the Exchequer. The jury found the prisoner "not guilty;" but the directors were so satisfied with the course they had taken, that they caused a verbatim report of the trial, as taken by Mr. Gurney, to be printed.

In 1814 the Co. obtained a special Act of Parl.—54 Geo. III. c. lxxix.—*An Act to enable the Atlas Assu. Co. to sue and be sued in the name of their Chairman or Sec. under certain regulations.* It received the R. assent 27th May, 1814. The D. of Sett. had provided that all actions were to be in names of trustees. The Act recited that difficulties had arisen; and it was therefore enacted as stated in the title. The "certain regulations" will be commented upon in our art. **LEGISLATION FOR INS. ASSO.**

In 1816 a bonus scheme for parti. L. pol. was propounded. Bonuses to be declared every 7 years. The profits on English and Irish bus. were to be kept distinct. The L. income was then £22,000 p.a., and the accumulated fund from prems. £69,349 1s. 4d. At this date also the plan was propounded of making ins. for the whole of life by a limited number of ann. payments. [**LIMITED PREM. L. POL.**]

In the same year a scheme of parti. for *Fire* pol. was adopted, in this form :

After payment of losses, and expenses attendant upon losses, the commission to agents and the charges of management, on a scale moderately proportioned to the receipts, the surplus prem. which may remain is returned to the assu. in respect of all pol. for £300 and upwards that shall have been in force from the term of 5 years. This return is made on pol. effected in Gt. Brit. and on those effected in *Ireland* distinctly, on the separate results of the accounts in each department—the total amount of losses being previously charged to the aggregate prems. As it will not be practicable to admit calculations for the fractional parts of a year, the returns of prems. are made only upon entire years, and ending at the Christmas quarter. . . .

The return on F. pol. whose period of 5 years ended at Christmas, 1822, was 25 p.c. for both Gt. Brit. and Ireland. The Co. about this period had agencies with committees of local residents in Dublin, Cork, Limerick, Belfast, and Londonderry. There were also committees in Edinburgh, Glasgow, and Manchester. The F. duty returns of a later date show that the Co. transacted a considerable F. bus. in Ireland.

The first bonus to L. pol. was allotted at the close of 1823—and was called "Surplus prems."—on a £1000 pol. taken out at age 30, and on which the ann. prem. was £26 14s. 2d., the rev. bonus for the 7 years amounted to £135, being just under 2 p.c. p.a.

In this same year Mr. Ansell was appointed Act. of the Co.

In 1826 the Co. issued : *Instructions for the Solicitors in correspondence with the Atlas Ins. Co. of Lond.* A well-written pub., from which we make a few extracts :

The Co. does not now grant annu., the terms offered by Gov. being more favourable for the public than any assu. office can afford to give. These favourable terms, it is understood, form part of the plan of Gov. for reducing the National Debt, by converting annu. in perpetuity into terminable L. annu.

The grant of endow. or the assu. of sums payable to children of specified ages, provided they attain the age of 21 years, has never formed a part of the bus. of this office.

Then the following :

Report on Appearance.—The solicitor will then see the party whose life is proposed for assu., and ask him the several questions printed on the fly-leaf of the declaration; particularly noticing any diseases or ailments he may state that he has had or is subject to. . . .

Young Life.—If the life proposed be that of a youth or girl, the solicitor is to inquire and state whether he or she have had the measles, hooping-cough, etc.

Gout.—If it be declared that the party have had the gout, the solicitor is to ascertain and report : 1. When the gouty symptoms first appeared. 2. What part of the body was affected. 3. How often the attacks of gout have occurred during the last 3 years.

Solicitors' Remarks.—The solicitor's own remarks on the appearance of the party whose life is proposed will then follow, as well as any information respecting the party which the solicitor is either possessed of or can obtain. These remarks he will be pleased not to write in the presence of the proposer of the ins. or of other interested party. As the directors rely much on the solicitor's report, they, of course, depend on his taking every means to satisfy his own judgment that all lives he may recommend or assu., or report favourably upon, have an equal chance of long life with other perfectly healthy persons of like age; since it must be obvious that none other can be assu. without a manifest disadvantage to the Co.

It is out of no idle curiosity that we read and extract these "instructions." We see in the care and sagacity they indicate the germ of that prosperity which has always characterized this office. Again :

Assu. of Solicitor's own Life.—When a solicitor proposes an assu. on his own life, and cannot conveniently appear before the directors, it would be proper that his replies to the usual interrogatories which accompany the declaration should be taken down, and the certificate of his appearance signed by some public character in the place to whom he may not object to apply confidentially; such as the minister of the parish or a justice of the peace. A similar course may be pursued in cases in which a solicitor has a personal interest in any other life.

It is carefully noted that "no alteration whatever can under any circumstances be made by a solicitor in a L. pol., nor can he make any indorsement thereon."

The bonus divisions of 1830 and 1837 call for no special remark. By 1841 the cap., orig. £120,000, had increased by bonus add. to £200,000. Mr. Ansell gave evidence before the Parl. Committee on Joint-Stock Assu. which sat in 1843. He gave some details regarding this Co., of which we have made use on the present occasion. He further said that however disastrous the F. bus. might at any time become, that circum-

stance would not in any respect alter the bonus or profit upon the L. bus. : the proprietors themselves would have to make good the deficiency arising from the losses on the F. pol., leaving the L. ins. fund untouched (answer 1925). We notice that the Deed was carefully drawn in this respect. [COMPLEX INS. ASSO.]

In 1844 a bonus investigation took place. The total surplus for Gt. Brit. and Ireland together at that date amounted to £262,472 14s. 8d.

In 1848 new regulations were made regarding distribution of surplus. The investigations and divisions were to take place every five years, instead of every seven. The next investigation, therefore, fell due at the close of 1849. The amount for distribution to parti. L. pol. was ascertained to be £246,995 6s. 2d., of which there was allotted to Gt. Brit. and Ireland £193,364 14s. 11d., "retaining £53,630 11s. 3d. as a cautionary reserve kept back to be improved at compound int., for the exclusive benefit of the pol.-holders." The surplus was declared to be realized and *not anticipatory*. The ann. income of the L. branch was then £170,000 : the accumulated L. fund £1,353,436.

We pass over several other divisions, and reach that of 1869. The *total* surplus allocated to L. pol.-holders, up to and including the then division, had reached the sum of £1,411,447, *cash*—purchasing rev. bonus, for, of course, very much larger sums. The pol. in force at that date were : ordinary whole life with parti., 5759 ; without parti., 65 ; special ins., 375—total, 6199 L. pol. There were 18 annu. (we have seen annu. bus. was discontinued before 1826) payable, amounting to £450 p.a. The average age of the annu. was 62. Two of the pol.-holders were upwards of 90 years of age. The future progress of the Co. will be learned from its ann. returns.

The office is unquestionably one of the most solid ins. inst. of the country.

ATLAS FREIGHT INSURANCE ASSO.—This Co. was founded in Sunderland in 1847, for the purpose of mutual marine ins. It was existing in 1853.

ATLAS MARINE (No. 1).—A Co. under this title was projected in Liverpool in 1852. We have not been able to learn its subsequent hist.

ATLAS MARINE INSURANCE Co. (No. 2), founded in 1857, and ceased to carry on bus. in 1863.

ATLEE, JOHN, was Sec. of *British Industry Ins. Asso.*, 1852.

ATMOSPHERE.—That volume of air that surrounds the earth. The term "atmospheric air" was introduced to distinguish the atmosphere from other *airs*—a term formerly applied to all the *gases*.

The earth, it is well known, is surrounded by an atmosphere of organic matter, as well as of oxygen, nitrogen, carbonic acid, and watery vapour. This matter varies, and is constantly undergoing transformation from organic into inorganic elements ; it can neither be seen, weighed, nor measured.—*Reg.-Gen. 10th Report.*

Dr. Farr has again and again drawn attention to the qualities and properties of the atmosphere as affecting human life and health. The following accompanied the 5th Report of Reg.-Gen. :

The atmosphere, besides oxygen and nitrogen, contains carbonic acid and aqueous vapour. The mean proportion of carbonic acid is 49 volumes in 100,000 volumes of air, according to the younger Saussure ; who also states that it varies from 37 to 62 volumes. Mr. Coathoupe has estimated the quantity of air which passes through the lungs of a man of ordinary size in 24 hours at 267 cubic feet, of which nearly 8 p.c. by volume, or 21 feet, are exchanged for carbonic acid ; the bulk would be equivalent to a cube of 6'4 feet. If, for a mere illustration, we assume that on an average 16 cubic feet of the gas are thrown off from the skin and lungs of each person, 30 million cubic feet will be exhaled daily by the pop. of the metropolis, distributed over an area of about 1951 million square feet. Add the amount of the same gas formed by animals of every kind—fires, lamps—and multiply the sum by 100, inasmuch as respiration for several hours in air which contains 1 or 2 p.c. of carbonic acid has been found to produce alarming effects (Broughton), and it will be seen that without effectual means of dispersion the amount of air vitiated in the metropolis, by this element alone, would be by no means inconsiderable.

Is the excessive mort., then, in towns, to be ascribed to the accumulation of carbonic acid, or of any similar gas, which is so rare as to be innoxious in open districts ? It was natural, when it had been discovered that carbonic acid mixed in air destroyed animals, and after many accidents in mines and closed chambers had been traced to this agent, to ascribe the excessive mort. of towns to the same cause. Further investigation must show, I think, that it has but a small share in raising the mort. of towns, the provision for its dispersion is so complete. [AIR.] [CLIMATE.]

ATONIA (from the Greek, *tone*).—A word denoting relaxation, a want of tone of the system generally.

ATONIC GOUT.—A variety of gout in which the characteristic symptoms of the disease are accompanied by *atony* of the stomach or other internal organ.—*Hoblyn.*

ATROPHY (technically termed *Atrophia*).—Want of nutrition ; a wasting and loss of substance, without any discoverable disease. A disease of the whole body, or of any particular part—thus *atrophy of the heart* is fatty degeneration of the muscular tissue of that organ.

ATROPHY AND DEBILITY (Class, DEVELOPMENTAL ; Order, *Diseases of Nutrition*).—The deaths from these combined causes in England show a considerable increase. In ten consecutive years they were as follows : 1858, 26,860 ; 1859, 27,990 ; 1860, 26,930 ; 1861, 29,291 ; 1862, 27,077 ; 1863, 28,193 ; 1864, 29,634 ; 1865, 32,161 ; 1866, 31,097 ; 1867, 32,317 ; showing a variation from 1393 deaths to each million of the pop. in 1858 to 1473 p. million in 1861, 1549 in 1865, and 1523 in 1867. Over a period of 5 years ending 1864 they averaged 1404 p. million.

The deaths in 1867 were : Males, 16,965 : Females, 15,352. Of the M., 14,725 died under 5 ; 122 between 5 and 10 ; 42 between 10 and 15 ; 26 between 15 and 20 ; 27 between 20 and 25 ; 59 between 25 and 35 ; 61 between 35 and 45 ; 158 between 45 and 55 ; 698 between 55 and 65 ; 1030 between 65 and 75 ; and 17 between 75 and 85. Of the F., 12,423 died under 5 ; 142 between 5 and 10 ; 51 between 10 and 15 ; 43 between 15 and 20 ; 30 between 20 and 25 ; 80 between 25 and 35 ; 135 between 35 and 45 ; 272 between 45 and 55 ; 846 between 55 and 65 ; 1310 between 65 and 75 ; 15 between 75 and 85 ; 4 between 85 and 95 ; and 1 over 95. [DEBILITY.]

ATTACHMENT.—The act of attaching money held by one person on account of another pending the result of an action. According to the custom, or mercantile usage, of the City of Lond., a writ of attachment may be issued by the Lord Mayor's Court against the money accruing or accrued of a debtor, in the hands of third parties, as a Bank, Ins. Office, etc. The order served is called a *Garnishee Order* ; and the duty of the person served will be fully explained under GARNISHMENT. In Scotland a similar process prevails, called ARRESTMENT.

ATTENUATION (Lat. *attenuo*, *to make thin*).—The lessening of weight, or consistency ; emaciation.

ATTESTATION.—Testimony, evidence, justification ; the execution of a deed or will in the presence of witnesses. *Attestation clause* : the sentence subs. to a written instrument, signed by the witnesses to its execution, stating that they have witnessed it. *Attesting witness* : a person who has seen a party execute a deed or sign a written agreement. He then subscribes his signature, for the purpose of identification and proof at any future period.

ATTFIELD, DR. JOHN, Director of the Laboratory of the Pharmaceutical Society of Great Britain, was examined before the Parl. Com. on Fire Protection, 1867, as to the explosive properties of petroleum, and other mineral oils. He said during the preceding six months he had procured 65 specimens of oils, purchased in shops, and some obtained from the Docks, in the neighbourhood of London ; and he submitted a table showing the temperature at which those oils gave off inflammable vapours. The results will be found under CHEMICAL PRODUCTS, and PETROLEUM.

ATTORNEY (Fr. *substituted*).—One who is appointed by another to do something in his absence, and who has his authority to act in the place and turn of him by whom he is delegated. He is of two kinds :—1. *Attorney-at-Law*. 2. *Attorney in fact*. This latter includes all agents employed in any bus., or to do any act for another ; also a person acting under a special agency, whose authority must be expressed by deed, commonly called a *power of attorney*.

AUCTIONEERS' FIRE, LIFE, AND FIDELITY CO.—An office under this title was projected in 1849, but it did not proceed to complete regis.

AUDIT.—An examining of accounts. Some years since a good deal of discussion took place as to the desirability or otherwise of a Gov. audit of the accounts of ins. asso., as a means of lessening the many abuses practised. The idea seemed feasible ; and we for a time gave it our support in a variety of ways. More mature consideration brought an alteration in our views. An audit is after all only a process of reviewing expenditure already incurred. It cannot question the *policy* of any given expenditure : it simply certifies that the expenditure has been made. To go further is to assume the function of management : an office in no way pertaining to an auditor. The publication of accounts—by which means all who are interested may criticize and censure—is a more effective remedy. We must briefly glance at what has been proposed, and what has been done in the matter of auditing.

Mr. W. T. Thomson, in his pamphlet, *On the Present Position of the L. Assu. Interests of Gt. Brit.*, pub. 1852—an able production—discussing remedial measures for the state of matters then existing, proposed (*inter alia*)—

(4). That a thoroughly practical and judicious professional act., *unconnected with any assu. office*, be appointed as auditor in conjunction with the Registrar [of Joint-Stock Cos.], with power to send for persons and documents ; and who shall be in close connexion with the B. of Trade. (5). That the B. of Trade, after a report from the registrar and auditor, and such further procedure as may be thought necessary, be empowered to suspend the operations of any so. whose management is dis-respectable or tending to insolvency.

This pamphlet was in the form of a letter, addressed to Mr. Henley, the then President of the Board of Trade.

In the same year Mr. Thomson pub. *Further Suggestions with Reference to the Amendment of the Joint-Stock Regis. Act, as regards L. Assu. Inst.* This was in the form of a letter addressed to Mr. Francis Whitmarsh, the then Registrar of Joint-Stock Cos. ; in which the preceding views were reiterated, and further developed and explained.

Dr. Farr was one of the early champions for a "public audit" of the accounts of L. offices. In his able Letter, which appeared in the 12th Report of Registrar-General (1853), he says :

A settled system of actual ann. audit will prob. ere long be instituted, and such returns be made in a statistical form, as will enable all the sound offices to estab. beyond any doubt their ability to fulfil their engagements, and to return a large surplus to the persons who insure.

He enters upon some illustrative reasoning ; and again proceeds :

If a public audit is called for in ordinary cos., and would be useful in banks, from which the depositor *can withdraw his deposits in a day*, something of the kind is required in L. offices, which engage to pay *their* depositors at the end of 20, 30, 40, 50, or 60 years ! In the keen competition for present prem., is there not some danger that, without such a check, the expenditure, and the promises of benefit at that distant day—the end of the depositor's life—may be too liberal ?

The finance of a L. office, it has been shown, differs essentially from that of any other co. While it is advancing to insolvency, its income may exceed its outgo for many years ; or it may have a large surplus of misappropriated capital, while its annual expenditure largely exceeds its income. An ordinary balance-sheet is no test to its financial condition ; and by using bad Tables, assuming different rates of int., operating on different principles, the results of valuations, as they are called, may be made to differ to the extent of many thousands—hundreds of thousands of pounds.

He clearly, however, is not advocating a system of *Gov. audit*, for that he speaks of on the same page as “neither desirable nor practicable.” Uniform accounts arranged in a scientific manner appears to be the scheme in his mind.

Numerous suggestions regarding audit and arrangement of accounts were made to the Select Committee on Assu. Asso. which sat that same year (1853) ; but the Committee in its report made no special recommendations on the subject of audit. [LIFE INS., HIST. OF.]

In the Joint-Stock Cos. Act, 1862, there are powers for the Board of Trade to appoint competent inspectors to examine into the affairs of any co. regis. thereunder, and to report to the Board. This power will be fully set forth under title BOARD OF TRADE.

The *Economist* newspaper suggested in 1869 the following scheme for a voluntary Gov. audit of Joint-Stock Cos. generally :—Any office so desiring to have the option of calling in a Board of Trade auditor, and obtaining and pub. his certificate, the Co. to pay the expense, against which, if it came through all right, it would have the advantage of announcing that its accounts were “certified.” Of course the investments must, for this purpose, be all in such shape, and of such a character, as to render their cash value easily discoverable—Consols, terminable annu., mortgages.

In the L. Assu. Cos. Act, 1870, there are no provisions regarding audit of accounts. In the U.S. there is no compulsory audit of the accounts of ins. asso. The investigation by the ins. superintendents in some of the States, no doubt, amounts to an audit, and a very stringent one. [ACCOUNTS.] [ACTUARIAL REPORTS.] [ANN. LIST OF MEMBERS.] [BALANCE-SHEETS.] [BOARD OF TRADE.]

AUDITOR.—One who examines and verifies the accounts of officers and others entrusted with money ; as also the accounts of asso. and public cos. The term is derived from the Latin audio, *I hear*, probably from the ancient practice of delivering accounts *viva voce*.

AUDLEY THE USURER.—This man was a great speculator in annu. on lives in the 16th century, and by his sagacity rose from being a solicitor's clerk to become a great capitalist ; and to attain all the ill-fame and all the wealth of a usurer. Francis, in his *Annals*, etc., gives a most amusing account of him, and probably not much overdrawn. [ANNU. ON LIVES.]

AULD, JOHN G., was Sec. in Lond. for *Colonial Life* from 1849 to 1854, shortly after which date he died.

AUSCULTATION (ausculto, *to listen*).—Auricular exploration. The act of listening by the application of the ear, in the examination of disease. It is termed *immediate*, when practised by the unassisted ear ; *mediate*, when performed by means of the stethoscope.—*Hoblyn*.

AUSTRALIA.—The population of our Australian colonies is growing rapidly. In 1830 it was 40,000 ; in 1860, 1,500,000. The excess of males over females at that date was 176,696. This operates against the adoption of L. ins.

Ins. in its various branches has, however, taken root in Australia, as it does in all Anglo-Saxon communities. The British offices at a very early period estab. agencies in all the principal towns. Local offices are now springing up, fire, life, and marine. An accident ins. office was tried there a few years since (1865), but after a year and a half's experience it was abandoned (1867), on the ground, “that sufficient risks were not obtainable.” Volunteer fire brigades have found much favour, and have been of essential service. Sydney several years since had a steam fire-engine ; probably some of the other cities now have them.

Among the local life offices that are best known here is the *Australian Mut. Prov.*, of which Mr. Morrice A. Black is now the Act. We have not a complete list either of the life or other Australian cos. at hand, but hope to furnish one in our supplement. It will be observed that a large number of offices have been founded, or at least projected, on this side for the special benefit of these colonies. We suspect the colonists have been reasonably sagacious in their selection. The *Anglo-Australian L.* presented some features which we have already noted. Several others follow to be investigated.

The climate of Australia is found to be well suited to persons of consumptive tendency. We shall speak of this more fully under LOCALITY.

AUSTRALIAN, COLONIAL, AND GENERAL LIFE ASSU. AND ANNU. CO., founded in 1839 with an authorized cap. of £200,000, in 2000 shares of £100.

This Co. (said the prosp.) has not been constituted before the directors and promoters

have entirely satisfied themselves of the soundness of its principles, and the reasonableness of their expectation that such a so. is now required. The document then sets forth :

Life assu. is better appreciated and more generally resorted to than formerly. It is acknowledged by a large majority of those who have assu. their own lives, that the prems. so applied are so much clear saving of that which would otherwise have been spent ; whilst to creditors and the possessors of every description of property dependent upon lives, it affords security and certainty which they could not otherwise obtain. Some persons (overlooking, in the ascertained and definite operation of the law of mort. upon large numbers, the proverbial and awful uncertainty of individual life) have indeed objected that they can employ their money themselves at a higher rate of profit than assu. sos. incumbered, as many of them are, with heavy expenses of management, can employ it for them. This objection, however, does not apply generally to this so.—as the directors will be enabled, by investing a part of their funds in perfectly good security at a high rate of int. in the *Australian Colonies*, in modes and under circumstances safer and more beneficial than are obtainable by individuals, to secure an average return much exceeding any which can be safely made by public or private investment in England, and which, with great economy in management, affords good reason to expect considerable profit to the assured.

Mortgages of the first class in Australia are as secure as those upon English lands, with this great advantage, that the latter have prob. attained their maximum of value, and may be much depreciated by alterations in the Corn or other laws ; whilst in these colonies the money so borrowed is usually laid out in extended and improved cultivation, whereby the security is increased year by year ; to which may be added that a public registry of all mortgages affords both facility and security to this mode of employing cap.

This so. will doubtless receive the support of those more particularly connected with the Australian Colonies ; as by its permanent investments therein, and by the security it will afford to monetary transactions, it must accelerate the development of their resources, and contribute much to their advancement.

No extra prem. was to be charged to persons ins. for the whole of life “for voyage as cabin or intermediate passengers in approved vessels to, or for residence in the Australian colonies in approved situations.” Distance from medical advice, occupation in whale fishery, or distant voyaging, would be covered by equitable prems ; “but parties may proceed from port to port throughout the Australian colonies in decked vessels of 100 tons and upwards.” Prems. on pol., wherever effected, might be paid in any settlement in Australia, “where there is a bank,” but always at the same, unless permission to change should have been given. Pol. might be made payable in either country by indorsement.

So much for the peculiar features of the office in relation to Australia. Now we have to glance at its other special features. Participation in profits and low rates of prem. were especially dwelt upon in the prosp.

In add. to the advantage of the low rate of prem. required by this so., *one-half* of the profits will be divided among the *assured* and *annuitants* ; but in the first instance one-fifth of the whole will be retained to form an *extra precautionary fund*.

The profits were to be divided quinquennially ; and there was this special feature, *that for each bonus declared, a separate pol. was to be issued, payable at death, quite irrespective of keeping up the original pol. ;* and as the prosp. put it, “increasing, without cost, in value every year.” The annuitants were to participate in the profits of the life fund ; and these profits were to be distributed quinquennially, by means of an *add. annuity*. But then there came this clause, based upon the “limitation scheme” of the *Equitable* :

The benefited members of the Co. will consist of the first 1000 pol.-holders for the time being, for the whole of life for £500 or upwards in one or more pol. ; and the first 1000 annuitants for the time being, who have paid £500 or upwards for their annu. Every vacancy in the 1000 benefited pol.-holders to be filled up by the next oldest pol. of assu. on the plan of the *Equitable* So. of Lond. ; and in like manner every vacancy in the 1000 benefited annuitants, by the next oldest deed of annu. The assu. and annuitants, however, will only succeed to the vacancies in their respective class.

There were descending and ascending scales of prem. One-third credit pol. were issued. The annexed was the ordinary parti. scale for whole of life :

But subject to this proviso, *that the rate would be revised ann. with reference to the rate of int. to be securely obtained, and other circumstances ;* “but no alteration will be made in existing contracts.” The prosp. further said, “T. of prems. for assu. on the lives of officers engaged in civil and military service in the East Indies have been calculated, and may be seen at the office of the Co.” The prosp. was signed by Christopher Cousins, Accountant. Mr. Edward Ryley was the Act. and Sec. of the Co.

In 1852 the bus. of the Co., which we believe had never been extensive, was trans. to the *Liverpool and Lond.*

AUSTRALIAN AND GENERAL CONSIGNMENT AND UNDER-WRITING ASSO.—This Co. was projected in 1853 by a well-known hand—Mr. J. Newnham Burnand, then described as a stock-broker. Its regis. objects were Marine and Commission bus. We do not find that it ever reached the stage of complete regis.

AUSTRALIAN LLOYD'S.—An asso. under this title, for the regis. of the shipping of the Colony, has been estab. in Melbourne.

AUSTRALIAN MERCANTILE MARINE.—This Co. was projected in 1853, and among its promoters was Mr. W. Blanchard Jerrold. The scheme did not go forward.

Age.	£	s.	d.
15	1	6	5
20	1	10	3
25	1	14	11
30	2	0	7
35	2	7	0
40	2	15	3
45	3	6	6
50	4	1	8
55	5	0	5
60	6	3	9
65	7	16	10
70	10	6	2

AUSTRALIAN AND ORIENTAL MARINE.—This Co. was projected in 1853, and shared the fate which befel most of the other projects with Australian titles put forward during that year—fell through and came to nothing.

AUSTRIA.—This Empire does not figure at all conspicuously in the early hist. of ins. Indeed it is only since Trieste was declared a free port, in 1719, that Marine Ins. has been cultivated; and unquestionably it has since then absorbed a considerable portion of the very large bus. of this class formerly carried on in Venice. With the bus. flowed also the incidents and customs by which the bus. had been regulated, or, as Mr. Reddie very well puts it, "if they did not borrow the Venetian jurisprudence, they must have been guided very much by the maritime usages of the Adriatic, and by the *Consolato del Mare*."

In 1774, the Empress Maria Theresa promulgated an Edict, which forms a tolerably extensive maritime code; and in 1816 there was pub. at Venice, *Editto Politico di Navigazione Mercantile Austriaca*. Neither of these documents presents any features requiring special comment here. They were simply a reflex of the maritime customs of the Mediterranean States, of which we shall speak at large under CONSOLATO DEL MARE.

We propose briefly to survey the progress of ins. in the Austrian empire; noting also the leading features in its pop. and vital statistics. The growth of L. ins. has been slow. The native offices are few—but we shall notice them in some detail, because they embody a few special features. Foreign cos. have found many difficulties placed in the way of carrying on a bus. of any magnitude there. There is some expectation of a general law for regulating such matters. It will be a great blessing, and if the measure be a liberal one, a wide field of enterprise will be opened up.

The first ins. co. founded in the Austrian empire appears to have been the *Azienda Assicuratrice*, estab. in Trieste, in 1822, for fire, transport, marine; and life ins. was added in 1850. Of that Co. we give a brief history under its alphabetical title, as it is transacting bus. in England, and therefore demands a special notice from us.

In 1823 there was estab. in Vienna, the *General Annuity Fund for Widows and Orphans*. Its object is to ins. annu. to the widows and children of the subscribing members who happen to die at least three years after their admission into the so. The widows are pensioned until their death; the children until the age of 20. The pensions are divided into three classes; the amount of each pension is dependent on the amount of capital possessed by the so. The maximum pensions, being £60 for 1st class; £30 for 2nd class; and £15 for 3rd class. The subs. can be paid (1) by a single payment at the time of admission, the amount of which is regulated according to the age of the subs., that of his wife, and to the class to which he wishes to belong, in accordance with a scale annexed to the statutes. (2) By an ann. payment, fixed at £3 4s. for the 1st class; £1 12s. for the 2nd class; and 16s. for the 3rd class. In 1850 the number of subscribers was 1989; the annual pensions granted, 618. The so. had then a capital of £135,506. It had paid in pensions up to that date, £194,562. The amount of pensions for 1851 was fixed at £40, £20, and £10, according to class. The expenses of management were only about £300 p.a.

In 1824 the *General Provident Fund* of Vienna was founded by the board of management of the Savings Bank of Vienna, by whom it was afterwards conducted. It had for its object the promotion and management of the *Mut. Asso. for Life Annu.* with partial alienation of the capital, according to a plan set forth in its statutes. The transactions of the asso. down to 1847 were considerable. At that date an exposé of the affairs of the management took place, and changes were instituted. At the close of 1850 a report was pub., which showed that conjointly with the Savings Bank, the total subs had been: for the classes for the years 1825-47, £948,457; and for the years 1848-50, £36,465: total, £984,922.

In 1830, *General Assu. Co.* was founded in Trieste—orig. called *Assicurazioni Generali Austro-Italiche*.—The Co. effects ins. of fixed sums guaranteed by the shareholders against risks by fire, maritime and inland navigation, transfer of merchandize by land; against hail, and also ins. of life. The cap. of the Co. is £200,000, of which 10 p.c. was paid down in cash. Half the said cap. is specially pledged to the L. department. About 1850 various modifications were introduced into the L. branch. (1). Persons under 51 might participate in 75 p.c. of the profits of that branch. (2). The insured having reached 80 years of age are exempted from the payment of all further prems.; and receive the sum ins. if they live till 85. (3). Half credit of prems.—4 p.c. int. being charged on half not paid. These arrears to be deducted from sum ins. The Co. has undertaken the management of Mut. Ins. Classes (Tontine), guaranteeing int. at 4 p.c. p.a., charging a commission of 5 p.c. on amount of subs. for management. At the close of 1850, the figures of the L. department stood as follows: Sums ins. payable at death (or age 85?) £469,927; L. annu. to be paid to a nominee after the death of another nominee, £9240.; ann. prem. income, £24,855; ins. fund, £51,423; profit reserve fund, £10,564; ins. of deferred sums, £96,062; prems. receivable, £1932; prems. accumulated, £35,512; profits in reserve, £776. L. annu. (ordinary) payable, £16,962; reserve for the same, £131,542; profits reserved, £5986. On the 31st Dec., 1851, the Co. held subs. for the Tontine classes, £13,872. Regarding the annu. payable, it has been remarked that L. annu. payable were very large in relation to the

sum accumulated to meet them—showing the average rate of annu. to be nearly 12 p.c. p.a.—a rate which would lead to the supposition that the average age of the annuitants was about 70 years ; or to another supposition, viz., that the rate of annu. allowed was very large.

In 1839 there was founded in Vienna the *Mut. Assu. Co. for Life and Annu.* Its bus. consisted of 6 classes : (1). Ins. of sums in case of survivorship. (2). Ditto payable on death. (3). L. annu. immediate or deferred. (4). Ditto payable after death of nominee. (5). Endow. in favour of minors ; or L. annu. payable after the death of a nominee until another nominee has attained his 24th year. (6). L. annu. increasing by accumulation of int. with partial alienation of cap. A remarkable feature of this so. was that the sums ins. were only payable *in the event of death occurring after 1 year from date of ins.* At the close of 1850 the sum ins. in each of the preceding classes was as follows : (1). £5208. (2). 143,984. (3). £1044. (4). £1005 ; while the prem. fund for each class was : (1.) £2322. (2). £17,521. (3). £8256. (4). £3836. (5). £12,775 ; which, with reserve funds of £5510, made a total of £49,220. It is believed that the "one year" limitation above mentioned, combined with great strictness in the selection of lives, constitute the chief reasons for the small bus. of the Co.

Regarding *Fire Ins.*—there were in 1850 5 proprietary offices and 5 mut. ones. The *proprietary* offices were—(1). The *Azienda*, of Trieste, founded 1822. (2). The *First Austrian Ins. Co.*, founded in Vienna in 1824. (3). The *Milan Ins. Co.* founded 1826—and not now belonging to Austria, but included here to explain the F. ins. statistics hereafter given. (4). The *General Ins. Co.* of Trieste, founded 1830. (5). The *Riunione Adriatica di Sicurtà*, founded in Trieste in 1838. The *mutual* offices were—(1). The *Mut. Fire Ins. Co. of Vienna*—for Austria proper and Hungary, founded 1825. (2). *Mut. Fire Ins. Co. in Gratz*, for the provinces of Styria, Carinthia, and Carniole, founded 1829. (3). *Mut. Fire Ins. Co. in Prague*, for Bohemia. (4). *Mut. Fire Ins. Co. in Inspruck*, for the Tyrol, Voralberg, and the principality of Lichtenstein. (5). *Mut. Ins. Co. against Fire at Brunn*, for the provinces of Moravia and Silesia.

These mut. offices ins. buildings only ; and appear to resemble in many respects the *Fire Casse* of the North German Towns. They are worked upon this plan—each of the members of the so. contributes proportionably to the sum for which he is ins., to the losses and expenses of management, the computation of which is made at the end of each year. In a few the contributions are limited to a certain maximum, which cannot be exceeded. If this maximum be not sufficient to pay the losses and the expenses, the surplus is taken from the reserved fund ; or in default thereof, the Board of Management have recourse to a loan repayable in the course of a certain number of years. The reserved fund is formed by means of an admission fee from each member of the so., and by a proportion of the profits set apart in the successful years. These inst. are under high patronage, and are much favoured by the local authorities. The expenses of their management are very small, but their statutes generally are very imperfect, independent of the defects inherent to the mut. system in F. ins. Conditions are enforced which show but little practical knowledge of ins. ; and especially there is a very incomplete classification of risks. The consequence is, or has been, that the proprietors of the worst class of buildings are favoured, at the expense of those who possess better.

Besides the principal F. cos. above described, there exist in some provinces, and especially in Bohemia, a number of mut. asso., the operations of which only extend to a few districts, and the members of which undertake to assist one another, either in money or materials in case of fire ; but their organization is too incomplete, or too little known, to be able to speak with proper knowledge of them.

The proprietary offices have subs. capitals varying from £300,000 down to £100,000 ; but several of them undertake other classes of bus., as Marine Ins., and Transit or Transport Ins. They also ins. merchandize, and other personal property against fire.

We have some account of the aggregate operations of these *Fire Ins.* offices in 1850. The risks undertaken by the *proprietary* offices in that year amounted to £71,570,352 ; by the *mut.* offices, £21,504,802—together £93,075,150. For losses, repairs, and compensations, the proprietary cos. paid in the year £103,417, being equal to '144 p.c. on sum insured ; and the mut. cos. £70,441, being equal to '327 p.c. on sum ins. Together they paid £173,858, equal to '187 p.c. We have not the returns of the prems. received by either class of co. ; but we have some returns of the per-centage of contributions paid to the mut. offices in various districts. Thus the contributions amounted, in lower Austria, to '366 p.c. ; in Upper Austria, '15 p.c. ; in Steirmark, Carinthia, and Krain, '25 p.c. ; in Tyrol, '3 p.c. ; in Bohemia, Moravia, and Silesia, '48 p.c.

In 1850 there were 30 Marine Ins. Cos. carrying on bus. in the Austrian Empire, chiefly at Trieste ; but a few of them in Vienna. Their aggregate cap. was £505,500—the largest being £60,000 ; the smallest, £10,000 ; the others intermediate. Trieste is the only town in Austria where marine ins. can be carried out on a large scale. Some of these cos. have agencies in Venice. The marine cos. which carry on that bus. solely do not make the state of their affairs public.

There is an Accident Ins. Co.—the *Conservator* of Vienna. Also a Plate-Glass Ins.—the *First Vienna Plate-Glass Ins. Co.* ; various CATTLE Ins. Cos. ; a *Mortgage Ins.*

Bank; several Re-insurance Cos.; and at least two offices, the *Austria* and the *Janus*, which undertake the ins. of stocks. We hope to give an entire list of the Austrian Ins. Cos., with their dates of estab. and objects, in our Supplement.

In 1852 there was read before the Inst. of Act. a paper: *An Account of the Ins. Cos. of Austria*; prepared by Herr S. Alessandro Daninos, Sec.-Gen. of the *Riunione Adriatica di Sicurtà*, in Trieste. The paper was printed in vol. iii. of *Assu. Mag.*; and from it we have drawn some of the facts here presented.

It appears from this paper that the prem. for *Life* Ins. are but a trifle above those charged in this country; while they confer the great advantage of terminating at 80, and of securing the sum ins. at 85. The *annu.* rates are more favourable to purchasers than ours. Thus the rate allowed p. 100 for ordinary L. annu., by 4 of the cos. named, were respectively, at age 50: 7.67, 7.94, 7.35, 7.86. Regarding *Fire* ins., his estimate of the total ins. in force at the close of 1850 was 172 millions sterling—concerning which he remarks:

This sum is indeed of not much importance, if the amount in other countries of Europe and their respective pop. be compared. But if we consider that in Austria the landed property is in a great measure concentrated in the hands of a small number of individuals—that trade and even agriculture are still so little advanced—that the rural pop. is for the most part in the greatest poverty—it will be easy to perceive that it is not disproportioned to the state of the country, and it would be impossible to obtain a considerable increase unless this situation be sensibly improved.

It is, however, fair to state that the Austrian cos. fulfil in the most honourable manner the engagements which they contract with the insured; and their integrity and stability give them a just title to public confidence.

In 1828 a statistical department was estab. by order of the Emperor Francis, with the special view of aiding the different branches of superior administration in the State. In 1844 the scope of the department was enlarged, and the pub. of the statistical returns was authorized, including what was purely administrative. So that the most ample information is within the reach of all who desire it; but there is very little bearing upon our subject to be obtained from these.

The earliest returns we find of the number of marriages are in 1837, and these are not official. In that year they were 132,080, giving as "people married" 264,160; but this does not include those of Lombardy, Venice, Hungary, Transylvania, and the military frontier. With these the marriages were 285,712—the people married of course just double that number. In 1840, the marriages, as shown by the official returns, were in Austria proper 132,253—the numbers for the districts named as excluded in the first mentioned returns are not given.

The pop. of Austria in 1857 was 35,018,988. In 1866 this was reduced to 32,530,002 by the loss of Venetia, etc. The density of the pop. was then 152 per square mile, being slightly below that of Prussia.

The marriage rate in 1862 was 1.826, the birth rate 3.945, and the death rate 3.020. Our Reg.-Gen., reviewing these figures in his 25th Report, 1864, said:—

Austria is evidently advancing rapidly, and the increase of marriages implies the increasing prosperity of the empire. . . . The measures tried successfully in England will diminish the high mort. there, which is referable to causes evident to all travellers in Germany, and which have attracted the attention of Dr. Helm, Dr. Haller, Dr. Glatter, and other patriotic Austrian physicians. In the mean time Dr. Flacker's tables exhibit, in a trustworthy form, an immense series of facts of universal interest.

Between Italy and Russia, on the Danube, extending from the Carpathians to the Adriatic, lies the Austrian empire, full of natural resources, and pervaded to a considerable extent by the industry and science of Germany; yet the death toll of Austria is high. It was 30 p. 1000 for the 8 years, from 1857 to 1864.—*Dr. Farr*, 1866.

No life tables have been constructed for the pop. of Austria; but the data exist, and have, to a certain extent, been pub., though in forms which present considerable obstacles to the calculation. We shall give a Mort. T. for Vienna. [VIENNA.]

AUSTRIAN LLOYD'S.—This is simply a steam navigation co., and bears no analogy to our own Lloyd's, either in its conception or uses.

AUTHENTIC, AUTHENTICATED.—Vouched for; warranted; resting upon proper authority; properly attended; genuine; real; true. As an authentic copy of pol., or any other document.

AUTHORITIES QUOTED IN THIS WORK.—In the course of these pages most of the leading authorities on the questions of which it treats will be found quoted. The rule we have followed is, to take the *best authority we could call to mind on the particular point under discussion*. On some undetermined questions, as the Value of FEMALE LIFE from an ins. point of view; LAW of MORT., etc., we have given the views of all who have in our opinion said anything worthy of permanent record. Of course we shall have made some errors of commission and omission, of which we shall never hear the last. Any palpable error we shall seek to rectify. [INS. AUTHORS.]

AUTHORIZED CAPITAL.—It will be observed that in speaking of the capitals of the various ins. offices we use the expression "authorized" capital. We do so for this reason: that while an office may be authorized by its constitution to issue capital to the extent of £100,000 or £1,000,000, or any other amount; it may, as a matter of fact,

have only issued £1000 or less; and it should be remembered that it is only the portion issued—that is actually subscribed—which has become available for the purposes of the co.

AUTHORS, LONGEVITY OF.—This subject we shall refer to under influence of occupation upon the duration of human life.

AUXILIARY (From Latin *auxilium*, *aid*).—Helping; assisting; a helper; an assistant.

AUXILIARY TABLES.—In 1785 Prof. Tetens, of Kiel, pub. at Leipzig, a work in German, the translated title of which is *An Introduction to the Computation of L. Annu. and Rev. which depend on the life or death of one or more persons, with Tables for practical use.* The author described his method as follows:

By means of a new auxiliary table, which can be made in accordance with the table of mort., by which it is to be reckoned, and at the rate of int. proposed for its foundation, the whole labour as well for life annu. as for the mean duration of life, may be reduced to one division. The preparation of that table requires nothing more than an easy addition, when regard is had to the duration of life only; but demands somewhat more trouble if it be extended to the calculation of life annu. It would not be desirable therefore to make it for one single ann. of the kind. But then it gives simultaneously all values of life annu., as well as all durations for every age at once.

It is contended that in the method which he proceeds not only to describe, but to illustrate, he really invented the *Columnar method*, which will be fully spoken of under that title.

The first paper which appeared in the first No. of the *Assu. Mag.* (1850) was one by Mr. Frederick Hendriks—*Memoir of the Early Hist. of Auxiliary Tables for the Computation of Life Contingencies.* The production was one worthy of the name and fame of its distinguished author.

In the second No. of the same Mag. there appeared: *Supplementary Remarks*, by Mr. Frederick Hendriks, *On Auxiliary Tables for Life Contingencies, including notice of a recent Table* by W. T. Thomson, Esq.

All the preceding pub. will be spoken of more in detail under COLUMNAR METHOD, and LIFE CONTINGENCIES.

AVENS, WILLIAM, was Sec. of *People's Provident* in 1853.

AVENTURE.—A mischance causing the death of a man, as where a person is suddenly drowned, or killed by any accident, without felony. This is now sometimes called *adventure*, but more generally *misadventure*: as the finding of a coroner's jury, "died by misadventure."

AVERAGE.—The word "average," as used in common parlance, is synonymous with *mean*, or *medium*, and signifies a rate or result, derived from several quantities. It has the same form, whether used as an adjective or a noun. We speak of the average time, or the mean time; of the average price, or the medium price; an average of several years, or the mean of many obs.—*Hopkins.*

But the word has another meaning, in relation to maritime commerce—a meaning of very extended application. In this relation it always includes the idea of *contribution*, in addition to that of common ratio or result. There is no exception to this. It is in this latter sense that we shall have to treat of it in some detail under its appropriate heads.

AVERAGE-ADJUSTERS (frequently called average-staters).—These are persons who, in the event of damage to cargo, apportion the loss in its proper degree amongst the several persons interested. It is a recognized profession, but of limited numbers; according to the *City of Lond. Directory*, 1871, there are but 17 persons so engaged here. These form an asso., "having for its object the promotion of correct principles in the adjustment of averages, and uniformity of practice among average-adjusters." There are other average-staters in Liverpool, Glasgow, and other outports; and many of these gentlemen are members of the asso.; while others residing abroad are associates thereof. Average-adjusters stand in the position of administering even-handed justice between the underwriters and the insured. They make out claims against the underwriters or co. from materials supplied by the insured. In 1870 a discussion was raised as to whether it was just that the underwriters should continue to pay the entire fee for "stating" the claim; but we believe no change was made. Mr. Hopkins (himself an average-adjuster), in his *Hand-Book of Average*, speaks of the importance of always defining the class of average, in respect of which a contribution has to be made. In support of this necessity he cites the case of *Oppenheim v. Fry*, finally disposed of in the Exchequer Chamber in 1864.

In some of the MARINE INS. CLUBS it is provided by the rules that all claims shall be made up by a "professional average-stater"; in others that the claims must be stated by a "Lloyd's average-adjuster": thus implying two grades in the profession, but we believe there is only one body. [GENERAL AVERAGE.] [SETTLEMENTS.]

AVERAGE CLAUSE.—It is by means of what is usually called the "average clause" that the principle of average contribution is incorporated into fire ins. policies in Gt. Brit. The expression is not happily chosen, because it is not distinctive; and for this reason, that an "average clause" and "average clauses" is and are introduced into marine pol. under a variety of circumstances to be presently explained. We propose, therefore, to speak of average in F. ins. under the head of AVERAGE POLICIES.

AVERAGE CLAUSES (MARINE).—There are various special clauses, technically called "occasional clauses," introduced into marine ins. pol. in practice, with a view to modify the risk, or rather with the view of causing the pol. correctly to define the risk actually

agreed upon and undertaken. The necessity for these arises mainly in the circumstance of one uniform *blank pol.* only being provided for the use of underwriters. A uniform *pol.* unquestionably has many advantages: the chief being this, that the risk will be the usual one *unless some specific agreement has been made for altering it.* These special clauses are of two classes: 1. Those *limiting* the underwriter's liability. 2. Those *extending* it. In Law these are termed "WARRANTIES," and under that head we shall discuss them fully.

AVERAGE, MARITIME.—Average in this sense properly means, a contribution made by *all* the parties concerned in a sea adventure; to make good a specific loss or expense incurred by *one* or more of them for the general benefit.

The custom is of very ancient date, possibly originating in a rude form with the first disaster to a vessel laden on joint account; and developing itself with that promptitude pertaining to all matters associated with the rights and obligations of commerce. It must however be remembered that in the very earliest periods of commerce vessels were of small size, and that the owner, as a rule, embarked with his goods.

There has been a good deal of speculation, naturally, as to which were the first people to settle the principles of maritime average in the form in which they have been handed down from nation to nation, for say something like 3000 years. We find nothing approaching the subject of average in the ancient Hindoo Laws. The Koran (admittedly of much more modern date) is silent thereon. The Sidonians, great in commerce, leave no trace of having understood maritime average. The Athenians do leave some traces; but all that we really do know, or have ground for believing, is that the rules which fixed the reciprocal obligations of the owners of the cargo of a vessel to contribute towards the reparation of sacrifices made for the common safety in a storm, were the same as those of the Rhodians, who next succeeded them in the greatness of commercial enterprise. The Rhodian practice of maritime average has happily been preserved to us in an authentic form; but this only from the circumstance of the Romans having fallen back upon it for guidance in the formation of their mercantile code. While this is a testimony to the perfection of the Rhodian custom, it has also been the means of extending the practice of maritime average to every civilized country. The doctrine of average, and also that of salvage, are expounded in the chapter of the Digest—*De Lege Rhodia de Factu* (Dig. xiv. 2). We propose very briefly to state that doctrine, and for this purpose we fall back upon *Gravina's Summary of the Doctrine of Mercantile Average of the Rhodian Laws*—furnishing the very best translation thereof we can command. We have the assurance of the compiler of this summary, "that of all the laws of Rhodes, the purport of this chapter has alone come down to us in its entirety":

If by the force of winds or storms a tempest should arise, which should bring the ship into danger, and to set it free from such danger it should be necessary to lighten it, and to relieve it by jettison of the cargo, the loss to the owner of the wares so jettisoned shall be made up by all the owners of the wares saved, by an equable contribution—the chief sailor [*i.e.* captain or owner] himself, too, contributing his proportion.

But into the calculation of the contribution also comes the proportion of wares thrown overboard [jettisoned]: so that the owner of them can exact so much less from the rest in proportion as he suffers in respect of the wares thrown overboard.

Wherefore, if two men should each of them own a hundred [parts] in the cargo, and Caius, the owner of the goods thrown overboard, shall own two hundred, Caius on a loss of the cargo should receive fifty from each of them: losing his other hundred by shipwreck—because he had just as large a stake in the wares lost as they together had in the wares preserved.

Hence as the share of Caius, which represented 200, was in excess of the share of each of them, which represented [respectively] 100, in the same proportion after the disaster, the share of Caius, which represents 100, will be in excess of the share of each which is represented by 50, just as both before and after the disaster, the share of Caius exceeds by a half the share of each of the others. On the other hand, if Caius should throw over wares to the value of 50, but each [of his partners] shall have kept his own, estimated as 100, Caius shall suffer a loss of 10; but these other two shall contribute double each, namely, 20; so that just as his 50 answered to the 100 of each of his partners, in like manner his 40 may answer to the 80 a piece that each of them retains.

It has been justly said that the wisdom and equity of the rule will do honour to the memory of the state from whose code it has been derived as long as maritime commerce shall endure.

We do not intend to follow here those writers who have assumed to discover in this principle of average the origin of the contract of mutual marine ins. There was indeed the germ of the principle of mut. contribution: but only as a means of adjusting the rights of the shipowner and the merchant. As a matter of fact, the apportionment for the general contribution is—or, as Stevens has pointed out, *ought* to be made—without reference to any *pol.* being effected; and if the practice of marine ins. were discontinued to-day, the principle of average, which in this sense is average contribution, would continue until maritime commerce itself became extinct.

This custom of the Rhodians becoming, as we have seen, incorporated into the Roman Civil Law as embodied in the Pandects—and the Civil Law being adopted by nearly all the Admiralty Courts of Europe—and especially so by our own, its spirit is embodied in many of the decisions of our Courts even down to the present day.

The connecting link, so far as England is concerned, is directly obtained in the fact that William the Conqueror made, and Henry I. ratified, a law concerning goods cast overboard by mariners in a storm founded upon, or, as Molloy says, "in imitation of," the ancient Rhodian Law. [JETTISON.]

But admitting that the Rhodian—or as it will now be more convenient to call it the *Roman*—law of average contribution was generally adopted at the early period of which we are now speaking, it was not so adopted without various modifications ; and it will be instructive to ascertain, as briefly as may be, what were the modifications successively introduced.

In the Digest of the *Basilica*, compiled by the Byzantine Emperor Basilus and his son Leo, A.D. 867–880, the following provision was contained regarding average contribution :

And when of different parcels or quantities of goods, mixed and confounded, prob. in consequence of their being of the same kind, a part had been thrown overboard for the safety of the vessel, and the rest preserved, it was provided that what was saved should be divided between the proprietors, in proportion to their shares and interests in these goods.

This provision differed from that embodied in the *Rhodian* law, or perhaps was rather a refinement upon it. [BASILICA.]

By the laws of the *Crusaders*, promulgated by Godfrey de Bouillon and his followers after the conquest of Jerusalem in the 11th century, contribution was admitted, and enforced, only when jettison had saved the ship—following in this respect the Roman law and the *Basilica*. [CYPRUS, MARITIME LAW OF.]

The *Statutes of Pisa*, for the regulation of maritime affairs, promulgated about 1160, admitted contribution only when the jettison had saved the ship. [PISA, MARITIME STATUTES OF.]

In the *Jus Navale Rhodiorum*, a Greek compilation of maritime laws, and concerning the date of which we can approach no nearer than to say that it was anterior to A.D. 1167, the legal doctrine relative to jettison and contribution is altogether opposed to that of the *Digest* and the *Basilica*, for it made no distinction between *general* and *particular* average ; or, as Mr. Reddie puts it, “It rejects the fundamental distinction between the averages which are called general, or common, *Removendi communis periculi causa*, and those which are called particular, *Cum cæteris, in communi periculo, non est consultum* ; and prescribes contribution in both cases.” [JUS NAVALE RHODIORUM.]

The *Statute of Marseilles*, promulgated 1253 and 1255, for the regulation of maritime affairs, admitted contribution only when the jettison had saved the ship. [MARSEILLES, MARITIME STATUTES OF.]

The *Capitular Nauticum* of Venice, under date 1255, extended the contribution to shipwreck and to pirates—following in this respect the *Jus Navale Rhodiorum*. [VENICE, MARITIME LAWS AND USAGES OF.]

The Maritime Ordin. of *Barcelona*, promulgated 1258, admitted of contribution only when the jettison had saved the ship. This Ordin. was quite distinct from the *Consolato*, of which we have next to speak. [BARCELONA, INS. ORDIN. OF.]

We now arrive at a period of change. The 13th century was essentially a transition period, as will be seen more fully in our Hist. of Marine Ins.

In the *Consolato del Mare*, generally admitted to have been compiled in the 13th century, the subject of contribution is treated in a different manner from any of the preceding, both with regard to the kind of sacrifices which give rise to average contribution, and with regard to the mode of valuing the articles which were to contribute. We have seen that the Roman law, the *Basilica*, and the law of the Crusaders, admitted contribution only when the jettison had saved the ship ; and the same rule was adopted at Pisa, Marseilles, and Barcelona. The Greeks, in their *Jus Navale Rhodiorum*, and the Venetians, in their *Capitulare Nauticum*, had extended the contribution to shipwreck, and to capture by pirates. The *Consolato* admitted both systems ; the first as legal, the second as conventional, viz., as taking place only so far as the parties interested had entered into an agreement called *Germanimento*, by which all losses from any accident whatever gave rise to contribution, even when the law did not otherwise require or enforce it. [CONSOLATO DEL MARE.] [GERMANIMENTO.]

The *Consolato* thus made a sort of compromise between the ancient law, preserved in most maritime countries during the Middle Ages, and the law more recently introduced into others of these countries during those ages. But for the mode of valuation of the articles sacrificed, and of those which behoved to bear contribution, the *Consolato* adopted a system not to be found in any anterior or contemporaneous legislation. The Roman law and the *Basilica* caused the things sacrificed to be valued at their prime cost ; and the things saved according to what they were worth at the place where the contribution was made. The maritime States of the Mediterranean, such as Pisa and Marseilles, and the Ordin. of Arragon, substituted for this imperfect system a more just rule, directing that the valuation of the things lost, and of the things preserved, should be made according to their worth at the time of their contribution. But instead of choosing between these two systems, the *Consolato* directs that the goods shall be valued at the prime cost, if the jettison has been made during the first part of the voyage ; and if during the second part of the voyage, at the price of the port of arrival.—*Pardessus, Reddie.*

The *Roles d'Oleron*—concerning the origin of which so many fabulous stories have been circulated—and the date of which we cannot place anterior to A.D. 1266—appear to follow more generally the Roman law. It is from this compilation, mythically attributed to our own King Richard I., that our maritime usages have in a considerable measure been formed. [OLERON, MARITIME LAWS OF.]

The Maritime *Laws of Wisby*, to which we cannot assign an earlier origin than the 14th century, appear in the main to follow, on the subject of contribution, the *Roles d'Oleron*, modified in some degree by the usages of the Hanseatic League. [WISBY, MARITIME LAWS OF.]

There is then abundant evidence that the practice of raising contributions by way of average for services in relation to the transport of merchandize was in force in many of the maritime States of Europe at a very early period. In the vols. of Venetian State Papers relating to trade with England, pub. by that accomplished scholar Mr. Rawdon Brown, it will be found recorded under date 1406: "A present of 60 ducats for Dino de Rapundis is to be paid by average on the merchandize of the Flanders Galleys." In 1408 there is a decree of the Venetian Senate authorizing an expenditure of 200 golden ducats for presents to the King of England and the Duke of Burgundy, to be paid by average on goods by the Flanders Galleys. This Mr. Hopkins considers was prob. for safe conduct. In 1438 there is a missive from the Venetian Senate to the Vice-Captain of the London Galleys, Ser Lorenzo Moro, concerning an average of 240 ducats for goods which he had been compelled to throw overboard.

There is still, however, a wide gulf to bridge over between the use of the term Average Contributions, in the sense of providing for a common casualty incident to maritime commerce; or even the use of the word "Average" in the sense indicated in these Venetian documents; and the use of the word in its modern sense, as applying to and embracing nearly every casualty to which either ship or merchandize is liable. It cannot fail to prove instructive to follow this latter phase through its several gradations.

In the Ins. Ordin. of *Florence*, under date 28th January, 1523, we do not find any specific mention of *average*, but the principle is embodied, thus:

Item.—For defraying the expenses they may be at for that purpose [saving and recovering the ship or goods], they shall assess the merchants and insurers concerned in the ship and cargo; taking the necessary measures to compel them to pay their quotas.

In the Ins. Ordin. of *Spain*, made by Philip II., 14th July, 1556, direct mention is made of "gross average":

X.—Jettisons made for a common benefit, unloading and lightening a ship to pass the shallows in the river of *Seville* and other parts, and all other common risks, shall be understood as a gross average, to be paid by the ship, freight, and goods; if the occasion was unavoidable, and without fault of the master.

The Ins. Ordin. of *Antwerp*, under date 1563, makes direct mention of average:

VI.—And in order to ascertain the damage which shall have happened by reason or in consequence of the above-mentioned jettisons, stranding or cutting away for the effectual preservation of life, ship, and cargo, all the goods, whether lost or saved, shall be valued altogether, according to the prices of the market where the goods saved shall be disposed of, for money or money's worth (first deducting from thence the freight and other charges), and then adding thereunto the true value of the ship, or the whole freight agreed for by the master, at the option and choice of the merchant; all which being added together, every one shall from the whole sum be rated in proportion to the goods which he has lost or were saved; which estimation and calculation of such averages shall be made by masters of ships and merchants experienced therein, and that are impartial.

In the Ins. Ordin. of the City of *Middelburg*, under date 30th September, 1600 (and renewed 10th December, 1689), we find the following:

XVII.—An action for the damage or decay of any ship or goods that are ins., *generally called average*, must be brought within a year and a half at furthest, if such average happened within the limits of *Europe* or *Barbary*; or within three years when at a further distance; the respective times of one year and a half, and of three years, beginning after the ships are entirely unladen.

XVIII.—Further, if the loss either by way of average or otherwise does not exceed one p.c., the assurer shall not be obliged to make good the damage, nor make any return.

Cowell, in his famous *Law Dict.* pub. 1607, says the word *average*, when applied to maritime commerce, means "a certain contribution that merchants and others proportionably make towards the losses of such as have their goods cast overboard for the safety of the ship, of the goods, and of the lives of those in the ship, in a tempest; and this contribution seems to be so called, because it is proportioned after the rate of every man's *average*, or goods carried."

In the Civil Statutes of the Republic of *Genoa*, under date 1610 (book iv. c. xvi.), title of "Jettisons and how to behave on such occasions," there occurs the following:

Everything that is thrown overboard, in the form as above described, shall be looked upon as a *general average*, and be divided into equal proportions upon the ship, freight, and cargo; among which are to be included money, gold, silver, jewels, slaves, whether male or female, horses and other cattle.

In 1622 Gerard Malynes, merchant, pub. the first ed. of his *Consuetudo, vel Lex Mercatoria; or the Ancient Law Merchant*, and therein he treats of "Contributions or Averidges." He speaks of contributions to be made in case of capture by "Pirats;" contribution for "spoyled goods;" contribution for lightening the ship; and also of contribution for pilots; but manifests no familiarity with the term average, which indeed he only uses in combination, or alternatively as above.

In 1676 Mr. Charles Molloy pub., *De Jure Maritimo et Navali: or, a Treatise of Affairs Maritime, and of Commerce, in three Books*; and therein he treats of "Averidges and Contributions," under the following heads:

1. Of goods and merchandize when subject to be cast overboard. 2. Of the account rendered of such ejected goods and by whom. 3. What goods must come into the averidge and what are exempt. 4. The ship's apparel, whether within the averidge. 5. The residue of the goods, where tacitly

obliged to answer the averidge. 8. Of goods remaining on shipboard spoiled by reason of the ejection of others, where subject to averidge. 9. Where ship and loading are both made liable to the averidge. 10. Of misfortunes, not subject to an averidge. 11. Where the remainder of the goods are exempted from the averidge, and the damage of the ejected goods falls on the master. 12. Damage to the ship where the lading contributes, and the standard rate of contributions. 13. The master becomes a captive for the redemption of ship and lading, where liable to the averidge and where discharged. 14. What goods are subject to the averidge. 15. Contribution for pilotage, and where the remaining goods not subject to averidge. 16. Rules general for settling the averidge.

In the Ins. Ordin. of *France*, generally styled *L'Ordonnance de Louis XIV. touchant la Marine*, and "*donné à Fontainebleau du mois d'Août, 1681*," there is not only a division relating to averages, but there is an attempt to define the different classes of average:

I. All extraordinary charges made for ship and goods, jointly or separately, and all damage that may happen after the lading and departure, to their return and unloading, shall be reputed average.

II. The extraordinary charges for the vessel alone, or for the goods alone, and the particular damage that may happen to them, are *particular and simple averages*. The extraordinary expenses made, and the damage suffered, for the common good and safety of the whole, both goods, and ship, are gross, or *general averages*.

III. Simple or particular averages shall be borne and paid by that thing which has suffered damage or caused the expense. The gross or general averages shall fall as well on the ship as on the goods, and shall be so much p.c. on the whole.

In the Ordin. "concerning assu. and averages for the city of *Rotterdam*," under date 28th January, 1721, there is a special chap. treating "of average," consisting of 36 clauses. We cannot follow all these, but may give one or two examples:

LXXXIII. All damage arising from anything that is voluntarily done for the preservation of ship and goods, or for preventing greater and more apparent mischief, shall be deemed general average, and be borne by ship and cargo.

LXXXIV. Consequently, when any goods are thrown overboard, or otherwise flung away, or emptied, in order to lighten the ship, it shall be particularly esteemed such.

CXIV. In order to make up the *general average*, the goods that are lost, as well as those that are saved, must be valued together, and the freight and other charges to be from thence deducted; then to add thereunto in the general average the value of the ship, or the whole freight, which of the two shall amount to the most: the freight in this respect to be calculated as well upon the goods that were saved, as upon those that were flung overboard, or otherwise lost.

CXV. And consequently every one is to receive or pay, out of this general stock, in proportion to the goods lost or saved.

CXIX. Nobody however shall, with regard to average, be further answerable than for the ship and goods that are liable to the same; and on relinquishing the same, every one to be free from any further demand.

In the *Prussian Maritime Laws*, promulgated about 1730, c. vi. treats of ins. These laws are generally known as the Ordin. of *Konigsberg*. In them is a chap. on average divided into four parts. 1. *Of community between ship and goods*. 2. *Of jettison, and other average damages*. 3. *Of contributions in gross averages*. 4. *Of common on the lesser averages*. The chap. opens as follows:

1. The goods designed for a ship being actually put on board, and stowed, they, together with the ship, come under the *general average*; so that whatever damage any of them may afterwards incur for the general advantage, must be made good by the several parties concerned, *according to the prescriptions of this chapter*.

The provisions which follow are remarkable for their detail and clearness; and show that at this date at least the application of the "average" to marine losses was understood almost in its fullest modern sense.

In the "Ordin. of the City of *Hamburg* concerning ins. and average," under date 1731, title 21 treats "of averages, and how they are to be settled":

I. All damages that happen to ships or cargoes, with all the ordinary and extraordinary expenses that are required, from the beginning of a voyage to the end of it, are deemed average.

II. Averages are divided into the lesser or ordinary, and the larger or extraordinary, commonly called *general* and *gross average*, as likewise into *particular average*.

III. The assu. never contribute anything to the lesser or ordinary average, under which denomination are comprehended all the usual payments, such as the ordinary pilotage, light-buoy and pile moneys, or hire of hoys, lighters, and boats, anchorage, ordinary quarantine charges, and such like; whereof the cargo bears two-thirds, reckoned according to the Lasts, but not according to the value, and the ship one-third.

It says that "to the *general and extraordinary average* belong particularly"

1. All damages that happen to a ship, its equipage, or the goods on board, or are occasioned by a defence it makes in engagements with enemies, privateers, and pirates. 2. The extraordinary pilotage and other charges, which a master is obliged to pay, when by reason of the ship having sprung a leak, or received other damages, he is obliged to seek and run into some harbour. 3. When a ship runs aground, and in order to get off again is forced to have the assistance of strangers, or be unloaded. 4. All what a master agrees for with any privateers or pirates, for the salvage of the ship and cargo, or what he is forced to give them, or otherwise let them have by consent for the redemption of the ship. 5. All what is required for the cure, attendance, and extraordinary maintenance of those officers and sailors, which are wounded or maimed in the defence of the ship, as likewise what is given to the widows and orphans of such husbands and parents as are killed in the engagement. 6. All what a master promises to a ship's company in an engagement or other dangerous accidents, in order to encourage them to a brave defence, and the preservation of the ship. 7. All cables and other ship's materials that are cut away, slipped, or worn out in the preservation of the ship. 8. All that is thrown overboard for the common benefit, or is damaged by such jettisons, or other means used for the preservation of the ship and cargo [except such as are exempted by other clauses of the ordin.] 9. When in time of war, goods or any other things are taken out of the ships by a privateer or other cruiser under commission, not being of the enemy's side, for which payment is promised, but not complied with. 10. The charges incurred by extraordinary quarantines, or other unavoidable accidents.

This formidable list will be useful for comparison hereafter with modern usages.

A codex of Commercial Laws pub. at Bilboa in 1738, generally designated the *Bilboa Marine Ordin.*, treats of ordinary averages, gross and single, and their differences. It commences as follows :

Whereas doubts and differences frequently arise by reason of the averages which continually happen, as well to ships as to goods and merchandize, by pretences sometimes made, that the *ordinary*, or *single*, are *gross* ones; and so on the contrary; and also in the manner of reckoning them: It is ordained, etc.

Then follows definition of the different classes of average, in relation to their causes.

In the "Ordin. of ins. and averages of the City of *Amsterdam*" [AMSTERDAM, INS. ORDIN. OF], under date 1744, and of which we have already given some account, there occur the following clauses :

XXXV. The average or damage on goods that happened during the voyage by outward misfortune shall be repartitioned on the gross cap. that the goods being found would have amounted to at the place of their destination: on the other hand, it shall be lawful for the inladers, owners, or those to whom they are consigned, to make ins. on the freight which they must pay for goods in case of a safe voyage; though on condition that the underwriters, who have ins. thereon, shall be obliged to pay only the estimate of the average fallen on the goods, and no more; and in case of a total loss returns can be demanded from him who has ins. on the freight.

XLII. And whereas the cases from which *gross averages* result are so variable in circumstances, that they cannot well be stipulated or provided for by any ordin.: those matters are left to the commissioners, to be by them decided and regulated according to law, reason, and equity.

In the Ordin. of ins. and averages made at *Stockholm*, under date 20th October, 1750—sometimes called the King of Sweden's Ordin.—the several kinds of average are treated under the following heads :

1. Of the *lesser* or ordinary average. 2. Of *particular* average. 3. Of average in common, or the *greater* average, together with the circumstances when goods cast overboard are entitled to average. The circumstances when goods cast overboard are *not* entitled to average. The circumstances relating to the ship, its tackling and apparel, which come within average. The circumstances relating to the ship, its tackling, and apparel, which are *not* included in average. 4. Of jettison. 5. Of rating and dividing the average. In respect of the lesser average. Of the greater average.

Then there is a supplemental series of art. "relative to ins. and average" :

1. Of brokers and their duty in the management of ins. and averages. 2. Of articles of fraud in ins. and averages. 3. Of the legal time for making a demand in cases of ins. and average.

After this investigation we shall not be surprised to find, as Mr. Manley Hopkins has learnedly pointed out, that by the common consent of nations, one word, slightly modified only by the genius of each language, has been adopted to express marine losses :

English, *Average*.

French, *Avarie*,

Dutch, *Avery*.

Danish, *Haverie*.

Norwegian, *Haverie*.

Swedish, *Hafverie*.

German, *Averic*.

Italian, *Avaria*.

Spanish, *Avaria*.

Portuguese, *Avaria*.

Russian, *Avarcia*.

From a careful study of the preceding authorities—and we believe none of importance have been omitted—it would appear that the application of the designation of "average" to the various adjustments of maritime loss was completely developed during the 17th century; all that has occurred since are either mere refinements, such as will occur from time to time in the laudable endeavour to place all interests upon an equitable footing, or such changes as actual experience has shown to be necessary.

Under this last head must be especially noted a modification introduced about the year 1749, by what is now called the "Memorandum," or more correctly, the "Warranty," and which runs in this form at the foot of the pol. :

N.B.—Corn, fish, salt, fruit, flower, and seed, are warranted *free from average*, unless general, or the ship be stranded; sugar, tobacco, hemp, flax, hides, and skins, are warranted *free from average under 5 p.c.*; and all other goods, also the ship and freight, are warranted *free from average under 3 p.c.*, unless general, or the ship be stranded.

The italics are ours. We do not propose to discuss at this moment the effect of the modifications so introduced. The matter has been mentioned under AVERAGE CLAUSES, and will be fully discussed under WARRANTY.

We shall now proceed briefly to note the various writers on the subject of average, from this period down to date.

In 1750 Mr. Wyndham Beawes pub. his *Lex Mercatoria Rediviva; or, A Complete Code of Commercial Law, etc.*; and therein he treats of "Salvage, Average, and Contributions," under one head. He says, "average and contributions are synonymous terms in marine cases, and signify, etc."; and then gives a very good summary of the practice incident to average, as it then prevailed.

In 1753 Nicholas Magens, Merchant, pub. in Hamburg the first ed. of his famous *Essay on Insurances*, wherein he discoursed of "average" as then understood, and brought much knowledge to bear on the subject. He especially discussed the bearing of the regulations in the preceding Ordin. on the subject of salvage, and offered observations "tending to settle divers doubtful points in making up accounts of losses and averages."

In 1759 Mr. T. Cunningham pub. *The Law of Bills of Exchange, Promissory Notes,*

Bank Notes, and Insurances, etc. The work passed through many eds. In the 6th (1778) the author says :

Average in the merchants' law is used or taken for a certain contribution that merchants and others, who have their goods cast into the sea, do proportionably make towards their losses for the safeguard of the ship, or of the goods and lives of those in the ship in the time of tempest; and this contribution seems to be so called, because it is proportioned after the rate of every man's average or goods carried. It is derived from the word *Averia*, Cattle.

In 1775 Mr. Thomas Parker, of Lincoln's-inn, pub. *The Laws of Shipping and Ins., with a Digest of the Adjudged Cases*; containing (inter alia) the determinations of the Courts of Justice on trials concerning shipping, ins., losses, averages, bottomry, barratry, etc. But there is nothing calling for any special note here.

In 1781 Mr. John Weskett pub. *A Complete Digest of the Theory, Laws, and Practice of Ins.*; compiled from the best authorities, in different languages. A valuable work. This is his digest of the subject before us :

Average means the accidents and misfortunes which happen to ships and their cargoes, from the time of their lading and sailing till their return and unloading. It is divided into three kinds: 1st. The *simple* or *particular* average, which consists in the extraordinary expenses incurred for the ship *alone*, or for the merchandize *alone*: such is the loss of anchors, masts and rigging, occasioned by the common accidents at sea; the damages which happen to merchandizes by storms, capture, shipwreck, wet, or rotting; all which must be borne and paid by the thing that suffered the damage. 2ndly. The large or common, called *gross* or *general* average, being those expenses incurred and damages sustained (whether by ship or goods or both) for the *common good, security, and preservation*, both of the merchandize and vessel; consequently to be borne by the ship, freight, and cargo, and to be regulated and proportioned upon the whole. 3rdly. The small or *petty* averages, which are expenses for towing and piloting the ship out of or into harbours, creeks, or rivers, and other port charges; one-third of which must be charged to the ship, and two-thirds to the cargo. It also signifies a small duty which merchants, who send goods in another man's ship, pay to the master for his care of them, over and above the freight; hence it is expressed in the bills of lading, paying so much freight for the said goods, with *primage* and average as accustomed.

In 1786 Del Signor Baldasseroni, Judge of the Revenue Court of Leghorn, pub. in Florence a work on Marine Ins., Bottomry, and Average. The 4th vol. was especially devoted to jetson, averages, and contributions, with a collection of cases decided by the Italian Courts bearing thereon.

In 1789 Mr. James Allan Park pub. *A System of the Law of Marine Ins., etc.* In this work, which has passed through many eds., was contained a very learned chap. on "General or Gross Average." He says :

This obligation, which, by the laws of all the maritime countries of Europe, binds the proprietor of the goods or ship saved to contribute to the relief of those whose goods are thrown overboard, is founded on the great principles of distributive justice; for it would be hard that one man should suffer by an act which the common safety rendered necessary, and that those who received a benefit from that act should make no satisfaction to him who had sustained the loss.

In 1801 Mr. John Ilderton Burn pub. *A Practical Treatise; or, Compendium of the Law of Marine Ins.*; and therein he treated of "general or gross average-adjustment, and the mode of computing the amount of the loss or damage."

In 1802 Mr. Charles Abbott (afterwards Lord Tenterden) pub. *A Treatise on the Law relative to Merchant Ships and Seamen*; wherein there is a chap. "On General or Gross Average." But there is nothing calling for special note here. In the same year Mr. Serj. Marshall pub. *A Treatise on the Law of Marine Ins., Bottomry, and Respondentia*; but he does not treat of average distinctively. About this date Mr. Strickland pub. *An Essay on Particular Average*.

In 1808 Mr. Alexander Annesley pub. *A Compendium of the Law of Marine Ins., Bottomry, etc., etc.*, in which the mode of calculating averages is defined and illustrated by examples.

In 1813 was pub. Mr. Robert Stevens' famous *Essay on Average*; a work dedicated by permission, in the first instance, to the Committee of Lloyd's; and which, after passing through many eds., is still held in much esteem.

In 1824 Mr. Wm. Benecke, of Lloyd's, pub. *A Treatise on the Principles of Indemnity in Marine Ins., Bottomry, and Respondentia; and on their Practical Application in Effecting those Contracts, and in the Adjustment of all Claims arising out of them.* It is a work of great authority. The writer treats of averages, and the distinction between general and particular average; of money raised abroad for the purposes of the voyage, and its relation to average; of the adjustment of general average; of total loss and abandonment; and of the adjustment of particular average. The work is well known in the U.S.

In 1844 Mr. Richard Lowndes pub. : *Remarks on the English and Foreign Laws and Usages as to General Average.*

In 1845 Mr. Francis Hildyard pub. : *A Treatise on the Principles of the Law of Marine Ins.*, wherein, comparing "average losses," he points out that they differ essentially from total losses, "because there may be many average losses in the voyage, and many average losses as well as one total loss; but there cannot be more than one total loss, for when that occurs the adventure is at an end."

In 1848 was pub. Sir Joseph Arnould's *Treatise on the Law of Marine Ins.*; by many regarded as the very highest authority upon the subject. It is instructive to note what this learned writer says regarding average :

The phrase "general average" is sometimes used to denote the kind of loss that gives a claim to

general average contribution, and sometimes to denote such contribution itself. In order to avoid confusion, it would have been better to use the term "general average loss" when speaking of the former, and "general average contribution" when speaking of the latter. All losses which give a claim to general average contribution may be divided into two great classes: 1. Those which arise from sacrifices of part of the ship or part of the cargo purposely made in order to save the whole adventure from perishing. 2. Those which arise out of extraordinary expenses incurred for the joint benefit of both ship and cargo.

Losses of the first class are those which are alone mentioned in the text of that Rhodian Law which is generally regarded as the foundation of the whole doctrine of general average; but it is evident that expenses incurred by the owner of part of the adventure for the joint benefit of the whole give just as valid a claim to contribution in general average as any other species of loss intentionally incurred for the same purpose; and they have been accordingly admitted to give such a claim by the law and practice of all maritime states.

The only distinction between these two classes of losses is in the principles upon which they are contributed for, which, as we shall see in the sequel, vary in two cases; and upon this ground it becomes of practical importance to bear the distinction in mind.

A general average loss, therefore, may be defined to be a loss arising out of extraordinary sacrifices made, or extraordinary expenses incurred, for the joint benefit of ship and cargo.

In 1851 Mr. Lawrence R. Baily pub. *General Average, and the Losses and Expenses therefrom*. This is a useful little book, and has passed into a 2nd ed.

In 1857 Mr. Manley Hopkins pub. his *Handbook of Average*, which has passed through several eds.—the 3rd in 1868. He treats the subject at once scholarly and popularly. Here are a few of his divisions. "Meaning of the word average—its origin." "Damage to merchandize, or particular average." "General average—definition." "Questionable subjects of general average." "The contributories to general average." "Of average connected with ins."

Mr. Hopkins moots a question which has often occurred to us, viz., "Whether it is desirable to retain one generic name, when the several species of claim embraced by it have become so individualized, and have such distinct characteristics?" But he also furnishes an answer which appears conclusive. "The word *average* is known throughout the world, and we therefore accept it in the sense in which it is ordinarily used." He then proceeds to see into what heads the word divides itself. These being:

1. *General average*. 2. Those charges and expenses which arise when a laden vessel puts into a port of distress, and which can be applied specifically to each of the interests—ship, cargo, and freight, frequently called *particular or special charges*. 3. The repairs of a ship rendered necessary by the perils of the seas. 4. Damages to merchandize by sea perils, including fire, plunder, etc. 5. Loss of freight by the decrease in quantity of the merchandize carried, by means of sea perils. 6. Partial loss of goods necessarily sold at an intermediate port, owing to sea perils. 7. Salvage loss of ship or of goods, recovered in part or in a deteriorated state, after being sunk, burnt, etc. 8. The constructive total loss of ship, goods, or freight. 9. The absolute loss or destruction of ship, goods, or freight. The last head is usually distinguished by lawyers from what they term "an average loss"; but on the grounds given above it is entitled to the same name as the rest.

We do not propose to pursue the subject in further detail here. It will be treated of in the course of this work under all its appropriate heads.

In 1860 there was pub. in Lond. a pamphlet bearing the title, *What can they do with it? Remarks addressed to the Merchants and Insurers of Lond. on the proceedings affecting General Average, at the Social Science Congress lately held in Glasgow*. By Amicus Curiae. This refers to an attempt to estab. a *General Average Law*, to which end a species of congress had been affiliated upon the Social Science Asso. We shall speak of the matter under GENERAL AVERAGE LAW.

In 1867 Mr. Ernst Emil Wendt pub. *Papers on Maritime Legislation*, etc. The book is of a practical character, as might be expected from the large experience of the author. Its scope and objects may be gathered from one passage in its preface:

I am sorry to be obliged to record that, in spite of the repeated attempts made by the Associated Chambers of Commerce to prevail upon the Board of Trade to make the International General Average Rules, as adopted at the Congress of Delegates at York, in September, 1864, a subject of imperial legislation, nothing has been done.

In 1867 also, Mr. Francis B. Dixon pub. in New York *A Practical Treatise on the Adjustment of General Average in the U.S. and other Countries*, etc. This book is what it professes to be—essentially a practical treatise. We shall have occasion to speak of it more at large under GENERAL AVERAGE.

We may take this occasion to remark that several very learned treatises on the subject of average have appeared by American authors. We regret that from their not being ready of access here, we are compelled to pass over them in this art.

It was but natural that when, by means of marine ins., the losses which formerly fell upon the owners came to fall upon the underwriters, these latter should have also transferred to them all the benefits from salvage, etc., which the principle of average was calculated to confer upon them; but it prob. never was contemplated that the underwriters should find themselves in a worse position than the orig. owners. Yet it appears to us that the underwriter is frequently in a worse position. He must pay average as often as its cause arises during the voyage; and he must also pay total loss, so that averages and total loss combined might cause an underwriter (or other insurer) for £1000, to pay £1500 or even more. As to the owner, it would seem that the remedy is only against the goods to the extent of their value. As to the underwriter, the remedy is under his pol. We observe that the Charter of Ins. Co. of Copenhagen recognizes and provides for this.

In time of war the risk of average is hardly considered—the greater peril of capture—which in many circumstances amounts to total loss, so far as the underwriter is concerned—absorbs the less ; but in time of peace this risk is deemed of greater charge to insurers than even that of *total losses*. In France they have calculated the annual loss of shipping during 18 years of peace at one ship in 180 ; and the averages have been estimated at *double that loss* upon the like number.—*Dict. du Citoyen*.

The French *Code de Commerce* thus authoritatively defines *average*:—All extraordinary expenditures made for the ship and the goods, either conjointly or separately ; all damage which happens to the ship and to the goods, from their loading and departure till their return and discharge, are reputed *averages*. [GENERAL AVERAGE.] [JETTISON.] [PARTICULAR AVERAGE.] [SALVAGE.]

AVERAGE POLICIES (FIRE).—These are pol. which contain what is technically called the “average clause”—and which imparts to such pol., in a limited degree, the principle of average, which is the leading feature of marine ins. These pol. are designed to cover merchandize in docks, warehouses, and bonded stores—called from the incidents of change, removal, and substitution, “FLOATING RISKS,” in the U.S. “Blanket pol.” Average pol. are indeed applicable to the largest mercantile transactions.

Over the greater part of the Continent of Europe—France, Belgium, Germany, and Russia—no fire pol. is issued without the provision of average or *pro rata*. The omission of it, in any branch of ins. (says Mr. Richard Atkins), throws so great an advantage on the side of the insured in the settlement of claims, that “it can be viewed in no other light than as equivalent to a very great, though unascertained reduction in the rate of prem.” All the English pol. issued in Egypt, India, China, and Japan, contain the same conditions as to average as are contained in what are known as the Lond. or Liverpool “floating pol.” In Batavia it is not so. In the U.K. an attempt has recently been made to apply the principle of average to farming stock ins. ; but private dwelling-houses are never ins. under such conditions here.

The cause of the omission of the *pro rata* principle in fire pol. of Gt. Brit., as contrasted with its general adoption in other parts of Europe, has given rise to some speculation. We think it may be discovered in this simple fact, that, whereas the first practice of fire ins. in many of the continental towns was by way of the *Fire Casse*, a sort of municipal fund, raised by a common assessment of all the house property of the place, to provide a fund for the protection of all—and therefore if any individuals failed to contribute their proper quota according to the value of their property, the *pro rata* principle would be applied in case of a loss. In Gt. Brit. the method adopted was entirely different. Fire ins. asso. were founded by a limited number of individuals, and they, as a matter of protection *to themselves*, limited the amount of ins. to a given sum—in the first instance £500. If a loss occurred, the insurers paid the damage incurred up to but not exceeding that particular sum, and there the transaction ended.

The next distinctive phase with us was the imposition of *stamp duties* upon the pol., which by the middle of the last century became in a great measure prohibitory of the spread of ins. : to be followed in 1782 by the imposition of a duty, first of 1s. 6d. on every £100 insured ; and increased from time to time until 1815, when it became 3s. p. £100—or about double the prem. on first-class risks. Nor was this all : the restrictions of the Stamp Acts—framed with a view to the utmost exaction—made it very doubtful whether “Floating pol.” were not beyond the scope of the law.

When, in spite of these and of many other restrictions, commerce yet began to assume stages of irrepressible advancement, then the number of fire offices began to multiply—so that every man could obtain, by means of separate pol. with the different offices, all the protection he required ; and these new offices were strong and wealthy combinations—capable of undertaking individual specific risks of great magnitude. Whereas if the number of fire ins. offices had remained small, and their limits restricted, as in many of the European countries, the principle of average must have suggested itself.

At length it did do so, and then the difficulty of the legal restrictions of the Stamp Acts cropped up in full force. These were ultimately removed in 1828, by the 9 Geo. IV. c. 14, which contained the following provision :

III.—Provided always, and be it enacted that nothing in this Act contained shall extend or be construed to extend to prevent the ins. from loss or damage by fire collectively in one sum for the whole, any number of separate and distinct buildings, and the goods, wares, merchandize, or other movable property contained in any number of separate and distinct buildings, or lying or being in any number of separate and distinct places ; provided that in the pol. whereby such ins. shall be made, *there shall be contained a clause stipulating that in the event of any loss or damage by fire happening to such property, or to any part of such property thereby ins., the insurer or insurers in such pol. shall be liable to pay or make good such proportion only of the said loss or damage as the sum ins. shall bear to the whole collective value of the said property, at the time when such fire shall first break out or happen.*

The clause, which was shaped under the authority of this Act, was, we believe, the following :

It is hereby declared and agreed, that in case of the property belonging to the insured in all the buildings, places, or limits herein described, shall, at the breaking out of any fire or fires, be collectively of greater value than the sum ins., then the co. shall pay and make good to the assured such a proportion only of the loss or damage as the sum ins. shall bear to the whole value of the property

aforesaid, at the time such fire or fires shall first happen. But it is at the same time declared and agreed, that if the within-mentioned assured shall at the time of any fire be ins. in this or any other office on any specific parcel of goods, or on goods in any specific building or buildings, place or places included in the term of this ins., this pol. shall not extend to cover the same, excepting only so far as relates to any excess of value beyond the amount of such specified ins. or insurances, which said excess is declared to be under the protection of the pol. and subject to average aforesaid.

The effect of this clause was and is, that if a merchant has goods of the value of £100,000 in one risk, and only insures £50,000 upon them, a fire occurring and destroying £40,000 worth of them, the merchant will receive from the ins. co. only £20,000—being the same proportion to the loss as the ins. bore to the whole value, viz., *one-half*.

It was soon found that the introduction of this clause into certain pol. while others were without it, might and did cause some difficulty in the adjustment of claims. An agreement was come to among the offices, as follows: When a fire occurred in any warehouse containing merchandize covered by "specified" pol.—that is, the old form of pol. against the new, or "floating" pol.—the specific pol. applying to that warehouse, was first to enter into settlement, *and bear the whole of the loss, when that did not exceed the sum total insured*. In cases where the sum of the specified pol. was not equal to the loss, the average pol. was to be brought forward in the second place, and to pay its share in the residue of the loss in the proportion that the sum ins. bore to the whole value of the goods covered in its range—after deducting the amount specially covered by the first pol.

This arrangement, however, did not go far enough. It did not reach the many complications resulting in cases of extensive destruction of mercantile property. Each office might have various pol. covering the same goods—either specific or floating; and many offices might jointly be interested in the loss under pol. of either, or both these classes. After much discussion, the practice settled down into the adoption of the following rule: That the floating pol. with the most limited ranges should be treated as specified pol. (after the actually specified pol. had taken up their proper burden)—*in the order of their extent*, and be called upon, in the first instance, in that order to make a settlement of the loss; while those of greater extent were only to be brought forward to cover any excess of loss which might be left *after the prior settlement made by those of lesser range*.—Atkins, *The Average Clause*, p. 16.

Matters went on under these arrangements until 1842, in which year some very destructive fires occurred. A great deal of difficulty arose in the adjustment of the losses, and without following these in detail, it will be enough for our present purposes to state that it was found that neither of the principles of adjustment already expounded would meet the case. The remedy devised was that known as the "Independent Liability Clause"—which abolished, in the case of floating pol., any priority of settlement on the ground of a greater or less range or extent of space covered by the terms of pol., and made *the actual liability of the pol., independently estimated upon the average principle, the measure of the proportion which the office has to contribute to the loss*. This alteration in the first instance was only made to apply to Liverpool floating pol.

In 1849 occurred the extended fire at the wool warehouses of Messrs. Gooch and Cousens. The salvage was unexpectedly large; the claimants for this very numerous—about 73 in all. Some were owners in their own right, and others simply as factors or agents. Some portions were ins. by specific, others by average pol. of every variety. Others again were wholly uninsured. Some of the proprietors by themselves or their agents put in their claim to distinct portions of the salvage—being able by the trade-marks or otherwise to identify those portions. With the exception of these, the whole body of the owners were entitled to a *pro rata* share of the salvage, *whether ins. or not*. To add to the complication, many cases appeared where the expiration of the days of prompt, or the partial payment for goods sold, but not finally trans., and other similar transactions, made the legal ownership, to say the least, very doubtful. Hence the important determination was come to by the offices, *that the warehouse-keeper's book should in all cases be taken as the test of ownership, for the purposes of settlement*.

We next reach 1860, when the "Independent Liability Clause," adopted in 1843, but restricted to Liverpool up to this period, came into general adoption for average pol. of all ranges granted by the ins. offices of the U.K. Concurrently therewith the average clause—developed into "clauses" by the successive changes already indicated—came to be settled into the following shape, which they retain to the present day:

1. It is hereby declared and agreed, that whenever a sum insured is declared to be subject to the conditions of average, if the property so covered shall, at the breaking out of any fire, be collectively of greater value than the sum insured thereon, then the ins. co. shall pay or make good such a proportion only of the loss or damage as the sum so insured shall bear to the whole value of the said property at the time when such fire shall first happen.

2. But it is at the same time declared and agreed, that if any property included in such average shall, at the breaking out of any fire, be insured by any other pol., which, whether subject to average or not, shall apply to part only of the buildings or places or of the property to which such average extends, then this pol. shall not cover the same, excepting only as regards any excess of value beyond the amount of such more specific ins., which said excess is declared to be under the protection of this pol., and subject to average as aforesaid.

3. And it is further declared and agreed, that if the assured shall claim under this pol. for loss or damage to property embraced in the terms of any average pol. extending as well to other buildings or places, or to other property not included in the terms of this ins., and if at the breaking out of any fire there shall not be any property in such other buildings or places, or any such other property

actually at risk to be protected by such pol., then, so far as regards the settlement of any claim under this pol., the terms and liability thereof shall be held to be concurrent, in all respects, with those of such other pol.

The fire offices have attempted more recently, and rather by a side wind as we consider, to extend the principle of average settlements by the introduction into specified pol. of the following, or a similar clause :

In case of the assured holding any pol. subject to average on the property covered by this assu., then this pol. shall be subject to average in like manner.

The effect of this clause, assuming it to be operative—which we consider somewhat doubtful—may and in many cases would be to cause the insured to receive less under the two pol. than he would under the former alone. We observe that Mr. Bunyon doubts the justice of the clause, “as it may be contended that the diligence of another set of insurers ought not to impart a fresh term into a prior contract to the prejudice of the assured.” Mr. Hore says tersely, “There is reason to look upon this condition as illegal.”

There can be no doubt that the introduction of the ‘average clauses into fire pol. is greatly to the advantage of the ins. offices. Its direct effect is to prevent merchants and others from ins. below the value of their merchandise—on the speculation that being of necessity, or according to the custom of trade, stowed in various locations, the whole would not be destroyed by any one fire. Mr. Swinton Boulton—and there can be no greater authority—said before the Select Parl. Committee on Fire Protection, 1867 : “If the average clause were introduced into all fire pol., the effect would be two-fold. First it would increase the amount of ins., and next it would reduce the rate of prem.”

In France, as we have already stated, all fire ins. are made subject to average. The following is a translation of the clause adopted in the pol. :

If at the time of a fire the value of the objects covered by the pol. is found to exceed the total of the ins., the assured is considered as having remained his own insurer for that excess, and he is to bear in that character his proportion of the loss.

In Germany the principle of average in fire ins. is generally in use ; but it is not at all an unusual circumstance, in regard to certain classes of risk, that the ins. offices should stipulate that the insured *must keep at his own risk* a certain proportion of the total value of the property insured. The following is the clause employed in the average pol. :

If in case of a fire the insured objects should exceed the sum insured, and they should be partly saved, the assured will be considered as self-insurer for the excess, and is to bear his share of the loss *pro rata*.

In the U.S. the practice is much like our own—the principle of average is only incorp. in the Floating, or as they are there termed “Blanket,” pol. The clause there in use is to the following effect :

It is hereby agreed in case of loss under this pol. that the amount for which this co. shall be liable, shall be only such proportion of said loss as the amount hereby ins. bears to the whole value at risk.

It will be observed that all these clauses—France, Germany, and U.S.—are much more terse and compact than our own. The cause of this in the two first instances may be considered as due to the fact that, there being no other method of ins., the operation is in reality familiar to the mind. In the latter case the same reason cannot apply.

In 1856 Mr. George Coode, acting upon instructions from Sir George Cornwall Lewis, then Chancellor of the Exchequer, prepared a report on Fire Ins. Duties. Much of the information contained therein is of a very valuable character, but does not apply to this part of our subject. He does however deal with the subject of “average” in fire ins., with the view of estimating the influence of a general adoption of average fire pol. on the ann. amount of duty. Here again we need not follow him, for the duty has happily been abolished. In 1860 a revised ed. of his report was issued, and therein was contained the following among other obs. on average :

It is urged that owners, under the system of ins. in gross, unfairly pick out of their property the hazardous portions, giving to the insurers only the dangerous part to insure, withholding from them all share in the safe and better part. But this complaint appears to ignore the very nature and object of fire ins., which is not to insure from loss what is by its nature safe from destruction, but is to make men's fortunes secure, and their minds easy in respect of that which is in jeopardy of fire. An ins. to insure incombustibles from fire would be a self-contradiction. And as to the hardship on the insurers of having none but destructible property to insure, it must in reality amount to nothing, inasmuch as their prems., founded in experience of the losses incurred in this very system of insurance, are proportionally high, and are admitted to be at least fairly profitable, being prems. for entire ins. against loss, and would be just as much lower than they now are, if the system were altered so as to make the seeming ins. only a partial ins. against the loss, or in any degree an inoperative and nugatory ins. of indestructible property.

Another reason offered is that ins. on average, making the owner a partner in the risk, makes him interested in saving the insured property when in danger from fire, and so converts the owners themselves into an excellent fire police. But this reasoning somewhat conflicts with the general reasoning by which the change is justified, namely, that the tendency of the “average” system is to compel owners to ins. the whole amount of the property. Instead of operating to compel all persons to insure the whole of the property, in which case under the average system they would recover the whole of their loss, and be wholly uninterested pecuniarily in the salvage, this recommendation of the average system assumes that owners will under that system do as owners do under the system of ins. in gross—insure for a part only of the whole value of the property. It is clear that so far as the average plan induced owners to insure the whole value, this argument would entirely fail, while so far as it would hold good of partial ins. under that plan, it holds good of all under-insurances under

every possible system. In its principle, this is an argument against all ins. whatsoever, as diminishing the strength of the motives of the owner to save his property. But it is a fact testified generally by the officers of ins. cos., that all honest owners, under the present system of ins. in gross, do exert themselves to the utmost to save their property from fire, and the experience is almost invariable that honest owners fully insured, who can save nothing for themselves, constantly save all that it is possible to save. As to the fraudulent ins., who propose to make a gain by their apparent loss, they as a rule do ins. to more than the full value of their property. They are interested in its entire destruction, and in effacing every vestige which would afford a trace of their fraud. But this motive for ins. fully, and for effecting a total destruction, operates equally under the system of average ins. as of ins. in gross.

In 1866 Mr. Richard Atkins pub. *The Average Clause: Hints on the Settlement of Claims for Losses by Fire under Mercantile Policies*. From that work, which is regarded as of considerable authority, we have drawn some of the preceding facts.

In 1870 Mr. W. H. Hore, of the *Liverpool, Lond. and Globe*, pub. *Remarks on the Apportionment of Fire Losses*: illustrating by numerous examples the practice of offices in complicated Average and non-Average cases: and suggesting means by which the difficulties hitherto experienced in apportioning losses covered by non-concurrent pol. may be avoided in the future. [APPORTIONMENT OF FIRE LOSSES.]

In 1870 a resolution was arrived at by several of the F. offices most largely interested in Farming Stock Ins. that the "Average Clause" should be applied to these. [FARMING STOCK INS.]

Perhaps the only objection to the principle of Average Ins. is that unless property be valued at the time of ins., and from time to time afterwards, the policy-holder cannot be certain, in many cases, that he is, or continues fully insured. In the case of mercantile risks this objection does not apply—because every merchant has occasion in the course of his bus. to keep an approximate, if not an exact, value of his stock.

It will be obvious that in the case of loss under average pol., the office requires from the insured, in add. to the statement of loss made in the usual form, a valuation of the entire property under the protection of the pol. at the time of the fire. Full details of the requirements in this respect will be given under CLAIMS, FIRE.

While these pages have been in the hands of the printer, a case has arisen which may alter in some material respects the practice in regard to adjustments under average pol. In the grain trade it has hitherto been the custom of the wharfingers to effect the necessary ins. to cover stock during the time it remains in their custody. This they accomplish by means of average policies of limited range—that is, limited to the wharf or wharves belonging to them individually. In the case of the fire at the King and Queen Wharf, which happened in Dec. 1871, destroying grain to the value of £150,000 or upwards, it turned out that some of the owners of portions of this grain had, as a matter of extra precaution, included it in their general floating ins., under average pol. of a wider range than those of the wharfinger, viz., pol. covering their stock in these and any other wharves. Thus portions of the same grain were twice insured. A contention has arisen among the offices—for of course the losses to the owners of the grain have been paid—as to whether the last-named pol. ought not to rank *pari passu* with the pol. effected by the wharfinger: that is, take their proper share of the loss notwithstanding their wider range; and notwithstanding the rule which has been practised of ranking pol. of the more limited range first. A special case is to be submitted to the Judges, by whose decision the offices interested agree to be bound. The upshot of this question will probably be that the owners, and not the wharfingers, will in future insure their own stock.

AVERAGE CALCULATIONS, STABILITY OF.—This subject will be discussed in our article on AVERAGES.

AVERAGE RISK.—It is well known to those who are really practically conversant with any branch of ins. bus., that, all other things being equal, the smaller the amount at risk in relation to any one contingency undertaken by the Co., the safer will be its bus. But it is also known that in many branches of the bus. the risks offered vary very much in amount—nowhere is this so marked as in fire ins. It therefore rests with the management to determine more especially what departure shall in any particular case be made from the *average risks* of the Co. This is a matter of vital consequence in the case of young offices. Various writers have discussed the matter in a theoretical point of view with great ability. We shall treat of the whole question under RISK, THEORY OF; and also to some extent under AVERAGES.

AVERAGE-STATERS.—See AVERAGE-ADJUSTERS.

AVERAGES, DOCTRINE OF.—It may be said that the whole fabric of ins. rests on the practical truth involved in the principle or doctrine of averages. That casualties incident to persons or things will, under given circumstances, reproduce themselves, with but small variations, admits of no dispute, and indeed is never controverted. Hence then we know that a sufficient number of persons being exposed to risk, the casualties incident to life or limb will continually recur; and that even the physical conditions of the elements, which produce hailstorms in summer and frost and flood in winter, will repeat themselves. When we come to the number of houses to be destroyed by fire, or the number of ships cast away at sea, we reach events which are in some measure dependent on the human will; but even here averages, extending over longer periods, sustain themselves. Hence we place implicit confidence in the doctrine of averages. But inasmuch as no ins. asso. does or can obtain all the risks of any one class, and is subject, therefore, to the incidents

of smallness of numbers—of irregularity in the periods of the risks being submitted to them—of uncertainty in the pecuniary amount to be made dependent on any one or more contingencies—to say nothing of the errors possible in its own selection, or the more serious mischances in the selection likely to be made against it ; it is clear that a blind reliance must not be placed even in the overwhelming truth of the doctrine of averages, treated as a whole.

We believe it was the celebrated mathematician James Bernoulli who first submitted to mathematical demonstration the stability of average results. In his *Ars Conjectandi*, pub. 1713, will be found his investigation of the Principle of Large Numbers, concerning which, after 20 years of reflection, he succeeded in obtaining a strict demonstration. We do not propose to follow his inquiry. He was succeeded by Laplace—other great men who had given some attention to the subject intervening. In his (Laplace's) great work on *Probabilities*, pub. in 1812, or in some of the learned memoirs which preceded it, the subject of averages in large numbers had been considered, in a totally different direction from the purpose now before us. Prof. De Morgan, in his treatises on the *Theory of Probability*, has treated of the same subject.

Prof. Tetens, in his *Introduction to the Calculation of Annu. and Rev.*, pub. 1786, had indeed approached the subject in discussing the Theory of Risk in relation to Life and Annu. transactions ; and that branch of the subject has been taken up by several other German writers recently, whose works we shall notice under RISK, THEORY OF.

We may say therefore generally, that it has been proved that the results of extensive transactions of the kind here contemplated approach to stability ; but no definite relation *between the extent of transactions and the degree of stability to be expected* had been arrived at until the appearance of the papers we are next about to notice.

In the *Philosophical Mag.* for Nov. 1859, there appeared a paper [afterwards reprinted in *Assu. Mag.*, vol. viii.] by Robert Campbell, M.A., *On a test for ascertaining whether an observed degree of Uniformity, or the reverse, in Tables of Statistics, is to be looked upon as remarkable.* The author says :

The following problem was suggested by certain remarks in Mr. Buckle's intro. chap. to his *Hist. of Civilization*. In that chap. Mr. Buckle remarks upon the striking uniformity usually exhibited by classes of phenomena—such as not only births, deaths, marriages, but such things as those apparently depending upon mere caprice—such as the number of letters ann. sent without directions through the post office, or those which appear likely to depend on the most capricious and irregular causes, such as murders and suicides ; and he proceeds to draw certain moral conclusions from the fact of this uniformity, namely, the existence of certain moral laws by which a section of the community, definite in number, is always impelled to such acts. But before entering upon a discussion of the legitimacy of such results, there appears to me always a previous question to be solved, namely, whether the degree of uniformity is *remarkable* or not. For supposing the observed uniformity to be not more than that which might be expected from events, the occurrence of which to individuals was conceived of as perfectly fortuitous, the whole argument would resolve itself into a pure metaphysical question, from which it would be hopeless to expect any practical issue.

He proposed, therefore, the following problem : *To find some test by which we may ascertain whether a certain observed degree of uniformity, or the reverse, in T. which give the numbers yearly occurring of a certain class of phenomena, is to be looked upon as remarkable or not ;* and then the following method of finding such a test :

Starting from the supposition that we know *nothing*, except the total number of such phenomena which have occurred during a certain number of years, let us try to find the degree of uniformity with which we should expect the phenomena to be distributed during the different years. If the uniformity obs. in the real tables is greater than this, we may fairly conclude that there is some cause of this uniformity, which we might hope to discover ; and further, that if there is any known cause which might tend to produce such uniformity, we may fairly ascribe such uniformity, in part at least, to such cause ; and if, on the other hand, we found the figures in the real tables to vary much more widely than we should expect from the knowledge of the mere fact from which we started, we might fairly say that the number in any year which presented such a remarkable deviation is *most likely* assignable to some disturbing cause acting in that particular year.

Such positive result will be matter of prob. ; but of this negative result we may be certain, that if the uniformity thus arrived at is very much the same as that of the real T., we shall not be justified in drawing any moral inference from that uniformity alone ; for it would be shown that such uniformity is only what is to be expected if we know *nothing* except the total sum of the tables.

The problem was worked out with a good deal of scientific detail ; and it will be enough here to state that the formulæ gave a general solution, by expressing the relative frequency with which each number should be expected to occur from the mere consideration of counting the combinations represented by it. But the formula then evolved was found to be fitted to aid in the solution of a much more useful problem—namely, to give us the power of prediction, in some very important practical cases, as to the *stability* to be expected in future results calculated from the obs. of an average.

This branch of the inquiry formed the subject of another paper, read before the Inst. of Act., Dec. 1860, and printed in vol. ix. of the *Assu. Mag.*, *On the Stability of Results based upon Average Calculations, considered with reference to the number of transactions embraced.* The author says :

The problem proposed in the following pages is this : *To show the degree of stability to be expected in the numbers representing the deaths in a given period to be experienced in the course of a Life Assu. bus. of given amount*—the problem, for the present, being treated on the supposition that the data on which the calculations of the office are based are sufficiently large to furnish the true average.

Mr. Campbell proceeds to the solution of his problem, and at length presents formulæ which

Easily supply the means of constructing T. by which it may be shown at a glance, in the case of an office expecting (according to average calculations) that a certain number (say 50) of lives will fall in the course of the year, what are the relative prob. of the number of lives actually falling being 50, 49, 48, etc., 51, 52, 53, etc. This being done, it will easily appear how, finally, we can form a T. showing, if the number on an average calculation be given, what is the prob. of the true number being found to differ from the calculated one by more than a given per-centage of its amount, which I conceive to be the best form in which the relation between the stability of an assu. bus. and the number of its transactions can be exhibited.

He eventually shows how the risk arising from fluctuations of luck *becomes diminished as the number of transactions increase*—becoming indeed, in the case of very large offices, an element of much subordinate importance to the fluctuations in the money market, which appear less reducible to law :

Take for example, the case of an office which calculates upon losing 70 lives in the course of the year. The odds against the losses in the course of the year *exceeding* this number by 20 p.c.—that is being greater than 84, are about 24 to 1—that is a result which we may expect to occur only about once in 25 years. But, looking at the possible losses in a septennial valuation of assets, we shall have to look at the result of taking 490 (say 500) as the calculated average. . . . The chances are about 5 to 1 against the losses exceeding the average by 5 p.c., and about 50 to 1 against their exceeding the average by 10 p.c. Again, in the case now contemplated, it is considerably more than 10,000 to 1 against the number exceeding the average by 20 p.c.; and the enormous ratio to which these numbers afterwards diminish, is just the mathematical expression for the certainty of which practice has assured us that the results of such contingent transactions on a sufficiently large scale will, within certain limits, compensate each other with unerring certainty.

We venture to suggest, what we have intimated at an earlier stage, viz., that the certainty of the results as above indicated must be dependent in some degree—where select lives alone are under obs.—upon the uniformity of the standard of selection adopted—a subject we shall treat of fully under MEDICAL SELECTION. The writer concludes his most instructive paper as follows :

I believe the foregoing pages will be of some interest in a practical as well as a theoretical point of view. No doubt those who are deeply conversant with the practical working of offices may acquire a kind of empirical knowledge of the relation between the stability and extent of such bus.; but even to the experienced it is thought that greater precision of ideas may be attained by the expression of this relation in figures; and moreover it is something to be assured that the stability thus experienced requires for its explanation no recondite principle of moral or physical laws, but is simply demonstrated by an arithmetical computation of the number of possible events between which there are no data for assigning preference of expectation.

For the sake of readers less familiar with the principles on which the reasoning with which we started is founded, it may be well to state the result of the present problem in its most elementary form. Take the case above supposed, where 500 is the average. The proposition is this: Out of various parts of the country, and from various occupations, etc., a number of people has been taken, of whom, according to the laws of mort. which (for the present) we suppose known with sufficient accuracy, 500 would die in the course of the year. For every combination of circumstances which would involve the death of a number greater than 10 p.c. of the above, there are 50 which would involve the number being below this limit. For every combination of circumstances involving the death of a number exceeding the 500 by 20 p.c., there are more than 10,000 equally prob. combinations of circumstances which will keep the number within that limit. It must be kept in view that the problem assumes—what of course is not quite realized—the true ascertainment of the average law. This, no doubt, in the first form of the problem, is implicitly involved along with the oscillations about the average here investigated; but I think the assumption already made will be scarcely disputed—namely, that it may be sufficiently ascertained in order to give the problem of the oscillations here treated a sufficient standing ground of its own. That being admitted, the stability of the results, practically important as it is, is simply the mathematical consequence, and the law of the oscillations about the average is that expressed by the above tables.

In July, 1866, Mr. Sprague read before the Inst. of Act. a paper: *On the Limitation of Risks: being an Essay towards the determination of the maximum amount of risk to be retained by a Life Ins. Co. on a Single Contingency*. This paper, it will be seen, leads right up to one of the most material points affecting the doctrine of averages in connexion with the practice of ins. The author tells us that the principles embodied in his paper “are by no means limited to life ins., but extend with suitable modifications to other kinds of Ins., as Fire, Marine, Hail-storm, Health, and Accidental Death.” They are also applicable to the risks of mercantile transactions. He says at an early stage of his paper that it is not his intention to seek by the aid of the higher mathematics a measure of the rate at which the prob. decreases when the number of cases is increased :

I have to confess, indeed, that I do not consider the results of these investigations [in *Probabilities*] of much practical importance in their application to the theory of life contingencies. In fact, we must always be careful in reasoning on that subject, that we do not apply our mathematical conclusions too unreservedly; we must always bear carefully in mind the suppositions and limitations under which they have been obtained. For example, if we trace from year to year the number of deaths in the pop. at large, we shall often find greater fluctuations than the theory of prob. would lead us to expect—the fact being that our fundamental supposition of the prob. of death being the same in different years at the same age, is rendered untrue by the occurrence of unhealthy years, or years of scarcity and distress. And as the number of persons under obs. in a life ins. co. increases and becomes very large, we may expect that while accidental fluctuations arising from the paucity of members will become of less consequence; on the other hand, fluctuations may be anticipated from the same causes as produce them in the number of deaths among the pop. at large.

In the *Assu. Mag.* 1869 (vol. xiv. p. 439), appears the translation of an able paper by Dr. M. Kanner, Act. of the *Frankfort Life Assu. Co.*: *On the determination of the Average Risk attaching to the grant of Ins. upon Lives*. He opens his paper as follows :

An ins. office, which, in consideration of fixed prems., undertakes the payment of a sum on the death

of the assu., strictly speaking lays a wager with each of the assured, in which the stakes are proportional to the prob. of the happening of the two contrary events—his living and his dying. . . . If the number of the assured be sufficiently large, it may happen that the office on the whole neither gains nor loses. Of all the cases that *may* happen, this is always the most prob., *if all the lives are ins. for the same amount and have the same prob. of death.* Moreover, the prob. of this case increases with the number of the assured, so that it approaches without limit to certainty, if the number of the assured should become infinitely great.

He proceeds to reason the matter out algebraically, and arrives at the following general proposition :

For any amount of insurances, whatever may be the ages of the lives ins., and whatever the nature of the ins., the sums of the mathematical expectations of gain and loss for any interval of time are equal to each other, if only the prems. are calculated upon the supposition of the most prob. case.

Finally he arrives at the conclusion, that

The risk to an ins. office is every disadvantageous possibility of a loss of any amount, and is therefore in itself indeterminate. But if we imagine any amount of existing ins. frequently repeated, so perhaps, that we represent to ourselves an indefinite number of offices all with the same amount of ins. in force, then will the total result in a given time for all the offices taken together show neither gain nor loss, if their number is assumed infinitely great. The individual offices nevertheless will have to show, some gains, and others losses, of various magnitude; and indeed all possible cases will appear in proportion to their respective prob. The limit of the ratio of the total losses to the number of offices represents the *average* loss, which is equal to the *average* gain; and herein lies the practical meaning of the *average risk*, as well as the justification of the term.

Again :

The principle of large numbers is the only true point of view from which to contemplate the law of mort. ; and a law being adopted, all the prob. of death are also given, to which we must adhere in all our calculations, so that new hypotheses are neither necessary nor admissible.

From this simple consideration the whole theory of risk at once follows, as here introduced, inasmuch as we have adopted the prems. for the ins. against every possible loss as the measure of the danger, and have finally found these prems. to be identical with the average loss or average gain. If we chose to consider the deviations of the mort. from the prob. case as errors, then we have the average error, together with the given prob. of that error, exactly as in obs. of natural phenomena involving measurements, where the prob. of error are known, and no hypothesis must be made with regard to them as must be done by applying the method of least squares. The average risk is consequently equal to half the average error, because the positive errors or possible gains are not taken into account.

The more practical aspect of the case will be treated of under RISK, THEORY OF.

AWARD.—In Law an instrument embodying an arbitrator's decision on the questions submitted to him by deed of submission, or otherwise, following an agreement for reference. [ARBITRATION.] By 9 & 10 Wm. III. c. 15, it is provided that parties desirous to end a controversy may agree that their submission of the suit to arbitration shall be made a rule of any court of record; and after such rule the party disobeying the award is liable to be punished for a contempt of the court. But an award may be set aside for various causes, as corruption, informality, etc., by motion in court within one term after the award is made. When submission has been made a rule of court, it is not revocable by either party without leave of the court.

AYRES, HENRY (for many years editor of *Bankers Mag.*), pub. in 1863: *The Balance Sheets of Ins. Cos., or the real advantages of publicity examined by reference to the accounts of cos. presented to Parl. in June, 1863.* This contains searching and sometimes caustic criticism on the official reports and manner of business of the life ins. offices in Gt. Brit.

AYRES, WILLIAM, Act. of *Hope Reversionary*, from date of its formation to 1847.

AZIENDA ASSICURATRICE [Ins. Co.] of Trieste. This Co. was founded in 1822 for fire ins. and for ins. on inland and maritime navigation. Its nominal cap. was then £150,000. It was increased to £200,000 about 1850, when the Co. entered upon the bus. of life ins. and granting annu. at fixed rates. A peculiar feature of this Co. is that it grants to persons who have not reached their 50th year, and who contract for a whole life ins., that their prems. shall cease when they attain 80, and that the sum shall be actually payable on reaching their 85th year—a most excellent provision. [AUSTRIA.]

In 1867 the Co. estab. a branch office in Lond. for fire bus. under the management of Mr. W. O. Funder. It was then announced that the subs. cap. of the Co. was £400,000; the paid-up cap. £120,000, and the reserve fund £180,000. In April, 1868, it was announced that the bus. of marine ins. had been added to the Lond. branch, and that Mr. Rudolph Bay had been appointed underwriter. We believe the experiment has been anything but a success; and recently legal proceedings were pending between Mr. Funder and the head office of the Co.

AZUNI, M. DOM. ALB.—A native of Sardinia, who became Judge of the Maritime and Commercial Court of Nice. He pub. in Paris in 1805; *Droit Maritime de l'Europe*, said to be taken, in very considerable part, from the very scarce work of Jorio—*Codice Ferdinando*. He was the author of several other works not coming entirely within our scope. His treatises on maritime law, though of considerable value, evince the spirit of the time, and the prejudices under which they were written, by their strong bias against England.—*McCulloch*. We speak of him again under CONSOLATO.

B

BABBAGE, CHARLES, M.A., F.R.S.—The late Mr. Babbage was a mathematician and a philosopher; but his name is chiefly associated in men's minds with the invention of a calculating machine, and his abhorrence of itinerant organ-grinders. He was Consulting Act. to the *Protector Life* (No. 1) on its estab. in 1824.

In 1826 he pub. *A comparative view of the various Inst. for the Assurance of Lives*. This was one of the earliest works of a popular character on the subject of Life Ins. It was afterwards reprinted in the German language. In this work was contained a mort. T. deduced from what Mr. Babbage believed to have been the experience of the *Equitable So.* [EQUITABLE SO. EXPERIENCE T.]; and another table showing the mort. of centenarians. [CENTENARIAN MORT. T.]

The *Quarterly Review*, on the occasion of reviewing the work (1827), observed: Mr. Babbage, we need scarcely say, ranks among the first mathematicians of our age: and is not merely an abstract calculator, spending his time in solving problems of transcendental geometry, constructing algebraic formulæ, or raising infinite series to the n^{th} power, but a man of general science, of varied talent; and one who, to his other acquirements, adds that of being a good practical mechanist. We need no further proof of this last point than the machine which he has actually constructed for the computation of logarithmic and other tables, and which alone would entitle him to rank with such men as Herschel and Brunel. [CALCULATING MACHINES.]

The *Edinburgh Review* also had a critique on the work.

In 1827 Mr. Babbage pub. *Table of Logarithms of the natural numbers from 1 to 108,000*—a work upon which he bestowed a vast amount of labour, and in its final production he paid attention to the convenience of calculators in various ways—in one especially, viz., by printing the tables on tinted paper. The work has been much used by computers both in this and foreign countries—the preface being translated into various languages.

In this same year he gave evidence before a Parl. Com. on Friendly Sos., and especially dwelt on the Mort. T. to be used for their calculations. [F. SOS.]

In 1829 Mr. Babbage addressed a letter to the Rt. Hon. T. P. Courtenay, urging upon him the importance of compiling and making public the mort. experience of the several then existing life offices.

In 1834 Mr. Babbage took an active part in founding the *Statistical So.* He had previously (1820) aided in the founding of the *Astronomical So.*

Mr. Babbage died in Oct. 1871, aged 80 years.

BABBAGE'S TABLES OF MORTALITY.—See CENTENARIAN MORT. TABLE; and EQUITABLE SO.'S EXPERIENCE TABLES. From this last a series of annu. values were deduced. ANNUITIES, HIST. OF—1826.

BABCOCK FIRE EXTINGUISHER.—See FIRE ANNIHILATORS.

BACH, HENRY, late of Sheffield, was well known in South Yorkshire for some years as a most successful life agent. He represented the *Trafalgar* and the *Unities*. In 1856 he became joint promoter of the *National Economic Life*, which, however, was never fully estab. A good deal of pamphleteering went on between Mr. Bach and the *Unities* in 1856, of which a very good outline may be obtained from the pages of the *Post-Mag.* for that year.

BACHELOR TAX.—In 1695 a tax was levied on all bachelors over 25 years of age, ranging from 1s. for an ordinary person, up to £12 10s. for a duke. The tax was at first imposed for 5 years, and produced £258,094 or £51,618 p.a. It was prolonged for 15 months, but was carelessly collected, and produced very little. The Roman Censors frequently imposed fines on unmarried men; and men of full age were obliged to marry.—*Vossius*.

In 1711 several offices were opened for ins. bachelors—insuring a sum of money in the event of their remaining bachelors a certain number of months.

Dr. Price was in favour of the Bachelor Tax, and apparently would have extended the principle to the female portion of the community. He says (1771):

One of the properest objects of taxation in a state is *celibacy*. I doubt not, but that by a fund supplied only from hence, the end I have in view might have been easily accomplished; and consequently the very means of paying off the debts of the nation, rendered at the same time the means of increasing its chief strength by promoting pop. in it.

In 1785 bachelors were subjected to a double tax on their male and female servants. [MORTALITY TAX.]

BACKHOUSE, WILLIAM, pub. in 1778, *A Dissertation on the Value of Life Annu., deduced from General Principles, clearly demonstrated, and particularly applied to the Schemes of the LAUDABLE and AMICABLE Sos. of Annuitants for the benefit of Age*. [ANNU. ON LIVES.] [WIDOWS' FUNDS.]

BACON, LORD FRANCIS, "Greatest, wisest, meanest of mankind," pub. in 1625 *Essay on Usury*. [USURY.] And in 1633, *The Historie of Life and Death*; with Observations Naturall and Experimentall for the Prolonging of Life. [LONGEVITY.]

BAD HEALTH.—Persons of admitted bad health are not insurable by life offices otherwise

than as diseased or impaired lives ; nor are they admitted to HEALTH Ins. at all ; and very rarely to ACCIDENT Ins. [CONCEALMENT.] [DISEASED LIVES.]

BADDELEY, MR. WILLIAM, C.E., occupied a considerable portion of his life in making various improvements in manual fire engines, and the apparatus connected therewith. The improvements which we are about to detail extended over a period of 42 years of his life :

(1). Improved stopping-board, for damming up water in street gutters for use of fire engines, A.D. 1820. (2). Iron gutters and sunk tanks, to supersede the necessity of breaking up the street paving, 1820. (3). Portable cisterns to be attached to plugs, for the same purpose, 1820. [Adopted by the Lond. fire engine estab. in 1836, and awarded a silver medal by the So. of Arts in 1838.] (4). Improved floating fire engine, 1827. [Adopted by the Emperor of Russia in 1840.] (5). Improved fire engine for steam boats, 1827. (6). Improved hose suspender, 1829. (7.) Beating springs for fire engines, 1829. [Adopted in floating fire engines by the Lond. F. E. estab. in 1838.] (8). Improved portable fire escape ladders, 1832. (9). Improved suction cocks for fire engines, 1833. (10). Horizontal double-acting fire engine, 1833. [Since extensively adopted by various makers of steam and manual fire engines.] (11). Improved suction pipe for waterside fires, 1833. (12). Improved handle for street fire cocks, 1836. (13). Improved engine lamps, superseding the use of links, 1836. [Used by the Lond. F. E. estab., etc.] (14). Improved three-way stand pipe, 1837. (15). Hose reel applied to fire engines, 1837. [Used in Birmingham and Lond.] (16). Stationary, capstan-worked fire engine, 1837. (17). Fan spreader for fire engines, 1841. (18). Blow-off cock for fire engines, for shifting hose, letting off water in frosty weather, 1842. (19). Cabinet fire engine, designed for the Duke of Rutland's picture gallery in Belvoir Castle, 1844. [Since extensively adopted.] (20). Portable fire engine (hand-pump), 1844. [Adopted by the Lond. F. E. estab. in 1848-49.] (21). Farmers' fire engine, 1847. [Commended by the Jurors of the Great Exhibition, 1851.] (22). Improved valved suction strainer, 1862. —[See *Young's Fires, F. Engines*, etc.]

Mr. Baddeley prepared special reports on the Lond. fires for the years 1850, 1, and 2—prob. for other years also.

In 1862 he gave evidence before the Select Committee on *Fires in the Metropolis*, of which the following is an outline :

I have for the last 40 years devoted myself entirely to the study of the protection of life and property from fire. I have studied it as a matter of science, independently of any business connexion. I am aware that it was the intention of the late Sir Robert Peel, when he introduced the new Police Act, that the protection against fire should be undertaken by that body, and it was only the difficulty which presented itself at that time, and the hostility of the fire offices, coupled with the great expense, which induced Sir Robert to postpone the measure. . . . It was only a question of time when it should be brought about. £60,000 I believe would be sufficient, at any rate for a beginning, to give very efficient protection to the metropolis. Without some new organization, if the fire brigade was done away with, there would be an increase of loss? Decidedly so. You are aware of the establishment of the Fire Escape Asso.? Yes, I have been an inspector of the so. for 17 years. It is I believe a very important adjunct to the present arrangement for the protection of life and property? It is a very valuable inst., and would have been still more valuable if it had had free scope. The men are a very superior class of men, and they render most essential services at the fires. They have extinguished in their incipient stages a very large number of conflagrations, and would have done more so, but that the police frequently interfere to prevent them, at the request of the brigade. In any arrangements which were made for the Metropolitan Fire Brigade, would you consider it desirable to amalgamate the Fire Escape Asso. under the Police? I would make but one force. At present we have four bodies of men at fires : my opinion is there ought to be but one.

The four bodies referred to by Mr. Baddeley, we presume, were the firemen, police, fire escapemen, and volunteers. The Royal So. for protection of Life from Fire presented Mr. Baddeley with £250, in token of its esteem for his services. He died in 1867, aged 61.

BADEN, ANDREW, SENR., late Superintendent of *Imperial Fire*. He entered the office as a junior in 1810, and passed through the various departments. In 1823 he became Fire manager, and continued in harness until his death in 1867, at the good old age of 74.

BADEN, ANDREW, F.I.A., Act. and Sec. of *Imperial L.* since 1867. Mr. Baden was trained to the bus. in the same office, which he entered as a junior in 1839, under Mr. Samuel Ingall. In 1848 he was appointed Assistant Act. of the Co. In 1863 he was selected from among a number of candidates for the position of Act. to the Lond. office of *North Brit. and Mercantile*. On the retirement of Mr. Ingall from the *Imperial L.* in 1867, Mr. Baden returned to that Co. and became its chief officer. We wish him a long incumbency. In 1871 Mr. Baden read before the Inst. of Act. a paper *On the Equitable Apportionment of a Fund between the Life Tenant and the Reversioner*. An important practical question very ably handled. The paper, and an abstract of the discussion thereon, are printed in vol. xvi. of *Assu. Mag.*

BADEN, GRAND DUCHY OF.—The pop. in 1861 was 1,369,291 ; and its density 234 to the square mile. This State publishes ann. exceedingly valuable statistics of its social condition and progress. The ins. of buildings is obligatory on the inhabitants, and has for half a century been carried on under the authority and support of the Gov. The value of property in buildings ins. about 1850 was estimated at £27,813,000—or an average of £20 17s. for each inhabitant. The average rate of prem. was 1·38 p. 1000—or 2s. 9d. p. £100. The Gov. were not supposed to make any profit on the transaction.

BADENACH, WALTER, Captain of the Bengal Army, pub. in 1826, *Inquiry into the State of the Indian Army, with Suggestions for its Improvement, and the Estab. of a Military Police for India.* [INDIAN ARMY.]

BAGGAGE INSURANCE (PASSENGERS).—The ins. of passengers' baggage, as distinct from merchandize, prob. has been practised for some considerable period, although there were no offices specially devoted to the bus. It was a risk undertaken by underwriters. With the great increase in travelling incident to modern times, offices have come to be founded, making this a special department of their bus. The following may be named :

1851.—*Maritime Passengers Ins. Co.*

1845.—*Travellers and Marine Ins. Co.*

The following is the scale of prems. charged by the *Travellers and Marine* for each £100 of passengers' baggage accompanying its owner on single voyages to the following places :

Australian Ports and Tasmania, 30s. to 40s. ; Africa, West Coast of, 20s. ; Algoa Bay, 45s. ; Bordeaux and Ports in Portugal, 10s. ; Boston, New York, Philadelphia, and Halifax, 17s. 6d. to 25s. ; Baltimore and Charleston, 17s. 6d. to 30s. ; Brazils (by Mail Steamers), 17s. 6d. to 25s. ; Buenos Ayres and Monte Video, 20s. to 30s. ; Belize and Honduras, 30s. to 45s. ; Batavia and Singapore, 45s. ; Bahia, Pernambuco, and Rio, 25s. ; California and Vancouver's Island, 70s. ; ditto, *via* Panama, 45s. ; Cape of Good Hope and Mauritius, 25s. to 30s. ; Canton and Hong Kong, 50s. ; Cuba and St. Domingo, 45s. ; Canaries, Azores, and Cape de Verdes, 10s. to 25s. ; French Ports in the Mediterranean, 10s. to 20s. ; Gottenburgh and Copenhagen, 12s. 6d. ; Holland (by regular packets), 5s. ; Hambro' (by regular packets), 7s. 6d. ; Indian Ports and Ceylon, 30s. to 40s. ; Italian Ports, Mediterranean Islands, Greece, Alexandria, Constantinople, and Smyrna, 20s. to 25s. ; Lisbon and Ports in Portugal, Gibraltar, and Cadiz, 15s. to 17s. 6d. ; Lima, Valparaiso, and Callao, 45s. ; Madeira, 12s. 6d. to 20s. ; Mobile and New Orleans, 40s. ; Memel and Ports in Prussia, 30s. ; Natal, 60s. ; New Zealand, Ports in, 45s. ; Overland Route to India and Ceylon, 25s. ; ditto to Singapore, 30s. ; ditto to China, 40s. ; ditto to Australia, 30s. ; Quebec and Montreal, 25s. to 40s. ; St. John's, N.B., 25s. to 35s. ; Spanish Ports within the Straits, 12s. 6d. to 20s. ; Sierra Leone, 20s. to 30s. ; Syria, Ports in, 20s. to 30s. ; Shanghai and Ports in China East of Hong Kong, 70s. ; St. Petersburg and Russian Ports, 32s. 6d. ; Vera Cruz, 55s. ; West Indies (excepting Cuba and St. Domingo), 20s. to 30s. ; Coasting Risks in the United Kingdom according to distance, 3s. 4d. to 10s.

NOTE.—The above rates apply only to Steamers and Ships classed A 1 at Lloyd's, or 3-3ds in the Veritas, and do not cover war risks. Special rates were named on application for inferior classed vessels ; or for first-class vessels where the cargo or any considerable portion of it was a dead weight, as iron, salt, rails, or coals.

BAILEE.—A person to whom goods are entrusted for a specific purpose.

BAILEY, ARTHUR HUTCHESON, F.I.A., one of the Vice-Presidents of the Inst. of Act., and for some years one of its Hon. Secs. Mr. Bailey commenced his ins. career in 1841 in *Protector* (No. 2) under Mr. Jellicoe. In 1847 he went to the *Eagle* (following Mr. Jellicoe). In 1855 he became Act. and Sec. of *Equity and Law* ; and in 1861 he entered upon his present appointment of Act. to the *Lond. Assu. Corp.* Mr. Bailey enjoys a high reputation as an act., and is accordingly consulted on many important matters arising out of the affairs of ins. offices. He has been especially so consulted by some of the highest legal authorities in connexion with the recent difficulties of the *Albert* and *European*.

In 1861 a paper was read before the Inst. of Act. *On the Rate of Mort. prevailing amongst the Families of the Peerage during the 19th century.* This paper was the joint production of Mr. Bailey and Mr. Archibald Day. It was printed in vol. ix. of *Assu. Mag.*, and has most deservedly attracted much attention, both in this and other countries. [PEERAGE, MORT. OF.]

In 1862 Mr. Bailey read a paper before the Inst. of Act. *On the Principles on which the Funds of Life Assu. Sos. should be Invested.* The paper is printed in vol. x. of the *Assu. Mag.* We shall have occasion to speak of it under INVESTMENTS.

In 1869 Mr. Bailey read before the Inst. of Act. a paper *On the Rates of Extra Prem. for Foreign Travelling and Residence* ; and the same was printed in the *Journal* of the Society (vol. xv.). The paper is one of great interest as well as of real practical value. [FOREIGN RESIDENCE.]

In Dec., 1871, Mr. Bailey read a paper before the Inst. *On Insolvency in Life Assu. Cos.* The paper came at an opportune moment, when the minds of the actuarial profession were much drawn to the question, and offered some important considerations and suggestions on the subject which it treated. [INSOLVENCY OF INS. ASSO.]

In add. to the preceding, Mr. Bailey has at various times contributed letters and obs. on points of ins. hist. and practice, which will be found scattered through the vols. of the *Journal* of the Ins. of Act.

BAILEY, CHARLES STUART, was Sec. of the *Colonisation Ins. Co.* in 1850. After that he joined the *Western* as Supt. of Agents. He followed that Co. to the *Albert*, where he occupied a similar position.

BAILMENT (from the Fr., *to deliver*).—A compendious expression to signify a contract

resulting from delivery. Questions of bailment not unfrequently arise in fire ins. adjustments.

BAILOR OR BAILER.—A person who commits goods to another person (the bailee) in trust for a specific purpose.

BAILY, FRANCIS, of the Stock Exchange, F.R.S., and one of the founders of the Astronomical So.—He pub. the following important works on ins. topics :

1. In 1802, *Tables for the Purchasing and Renewing of Leases, for terms of years certain and for Lives, with Rules for determining the Value of the Reversion of Estates after any such Leases ; and for the Solution of other Useful Problems, adapted to General Use. To which is added an Appendix containing, beside the Analytical Demonstrations, some Remarks on the Method by Dr. Price and Mr. Morgan, for finding the Value of Annu. payable Half-year, Quarterly, etc., together with some New Formula for determining the Rate of Int. in Annu.* 2nd ed., 1807 ; 3rd, 1812.

The orig. MS. of this work was produced in the Court of Chancery on the occasion of the application for an injunction against the pub. of *Inwood's Tables of Leases*, on the ground of piracy. This MS., as also that of the two following works, is now (since 1853) in possession of the Inst. of Act.

2. In 1805, *The Doctrine of Int. and Annu. Analytically Investigated and Explained, together with several Useful Tables connected with the subject.* 2nd ed., 1808.

3. In 1810, *The Doctrine of Life Annu. and Assu. Analytically Investigated and Explained ; together with several Useful Tables connected with the subject, and a variety of Practical Rules for the illustration of the same.*

It is this work which is best known in ins. circles, where it has long enjoyed a favourable reputation. A review of it was commenced in "The British Critic" for November, 1813, and concluded in the "The Gent. Mag." for March, 1814.

4. Also in 1810, *An Account of the several Life Assu. Cos. in Lond., containing a Review of their respective Merits and Advantages.* 2nd ed., 1811.

5. In 1813, *An Appendix to "The Doctrine of Life Annu. and Assu.," containing a Paper read before the Royal So., on a New Method of Calculating the Value of Life Annu.* This Appendix also formed a part of 2nd volume of "The Doctrine of Life Annuities," that work being divided at page 354, and two new title-pages being printed for the whole, with the date of 1813.

In 1836 the *Doctrine of Annu., etc.*, was translated into French, and pub. in Paris by the *Compagnie d'Assurances Générales sur la vie*. The translation was made by Alfred de Courcy. In the preface to this vol. the author passes in review many of the authorities who had preceded him, and adds the following passage :

The above are the principal English authors that have written on the subject of life annu. and assu. They are few in number, and the whole of their productions, taken collectively, by no means contain a complete view of the science, and moreover the late improvements have rendered them in a great measure either obsolete or useless. Under these circumstances, I was induced to form a new treatise, which should comprehend not only what is useful and important in either of the preceding works, but also such additional information as a more improved analysis and more recent discoveries in the science have been able to afford.

Mr. W. T. Thomson (*Encyclo. Brit.*) thus speaks of this work :

His vol. on annu. and assu. (ed. of 1810 and 1813) contains a clear demonstration of the whole theory. He adopts Simpson's notation, and gives solutions in the several cases of contingent annu. and assu. as Mr. Morgan had also done. He does not spare censure in expressing his opinions of Mr. Morgan's works, but although we do not admire some of the remarks made in his criticism, we cannot help being impressed with the idea that what Baily wrote he truly and honestly felt ; and if he does find fault, he is no less ready to praise when he thinks it deserved. His defence of Barnett every actuary must admire. Mr. Baily's work is a text-book in the study of the science, and contains extensive tables, calculated on the Northampton data, on the probabilities of living as observed by M. Deparcieux, and on the probabilities of living as observed in Sweden.

Mr. Baily was the author of various other works not bearing upon ins., and hence not particularly noticed here. In the pages of the *Assu. Mag.* will be found many references to his works. They will also be frequently referred to in these pages. Mr. Baily died in 1844, aged 70.

[ANNU. ON LIVES.] [BARRETT, GEO.] [COLUMNAR METHOD.] [LIFE INS.]

BAILY, GEORGE, was Man. of *Lond. Exchange Ins. Co.* in 1853.

BAILY, LAWRENCE R., pub. in 1851, *General Average, and the Losses and Expenses therefrom.* 2nd ed., 1856. And in 1860, *Perils of the Sea, and their Effects on Pols. of Ins.* These are regarded as useful and practical works.

BAKEHOUSES.—With a view to the public health, bakehouses have very properly been placed under Parl. supervision. The Act is 26 & 27 Vict. c. 40, *The Bakehouse Regulation Act*, 1863. By it no person under the age of 18 is to be employed in any bakehouse between 9 p.m. and 5 a.m., under penalties therein provided. Then follow provisions as to cleanliness, which were urgently needed.

BAKER, A. C., Sec. in *Lond. of La Gauloise Ins. Co.*, and of the *International Union*.—Mr. Baker has rendered some essential service in the preparation of this work. When any point in connexion with ins. hist. has remained in doubt, or whenever any part of our subject has required amplifying by add. instances, it has fallen to the lot of Mr. Baker to take up the pursuit. His knowledge of languages has also been of considerable use in the constantly recurring necessity of translating documents and references.

BAKER, THOMAS, Barrister-at-Law, pub. 1865, *The Laws relating to Public Health, Sanitary, Medical, Protective*, etc. We have had occasion to quote from this work, which is thoroughly practical, under several heads.

BAKER, W. R., was Resident Director from 1854 down to 1860 of *United Kingdom Temperance Life*.

BAKER'S ANNUITIES.—This was one of the many projects of 1720. In the *Daily Courant*, 2nd Feb., appeared the following :

A book for taking in subscriptions for raising the sum of £1,500,000, for purchasing of Government securities, granting annu. for life, and lending of money to merchants to pay their duties to the Crown, will be laid open at Garraway's Coffee-house, in Exchange-alley, on Friday next, the 5th inst., at 10 in the forenoon, and to continue till 5 in the afternoon, being more advantageous than any subs. hitherto proposed.

This subs. was completed, and on the 23rd Feb. a general meeting was held for the purpose of electing a governor and directors.

In the *Daily Post*, 27th May, appeared the following :

These are to give notice to the proprietors of the Annuity Co. taken at Garraway's Coffee-house, that the subs. thereto may repair to Waghorn's Coffee-house, in Pope's-head-alley in Cornhill, on Monday, Tuesday, and Wednesday next, where attendance will be given by the bankers' servant from 10 a.m. to 5 p.m., to repay back the subs. money according to the preamble and tenor of their receipts.

This was repeated during several months, with the explanation that the scheme was sometimes known as Baker's. [ANNUITIES ON LIVES.]

BAKER'S SECOND EDITION OF INSURANCE ON LIVES.—A scheme under this title was projected during the South Sea Mania, 1710-20, but has left no other trace than its title.

We do not know whether *Baker's Annu.* was regarded as the first scheme, or whether there was a distinct scheme of life ins previously. [LIFE INS., HIST. OF.]

BAKERS AND CONFECTIONERS.—In 1851 there were 42,717 males of 20 years and upwards engaged in these occupations, and 763 of them died during the year. The mort. to 1000 living at each of the decennial ages was as follows : between ages 25 and 35, 7 ; 35-45, 15 ; 45-55, 21 ; 55-65, 33 ; 65-75, 67 ; 75-85, 150 ; 85 and upwards, 321. Is it the confined atmosphere in which they work?—the early hours at which their daily labour commences?—or the influence of the flour-dust on their respiratory organs?—or a combination of all these which produces this high mort. ? There is a great difference between the habits of bakers in town and country. Young bakers exhibit, by the above figures, a low rate of mort.

Mr. Neison, in his *Contributions to V. Statistics*, 1857, found bakers not to be so unhealthy as had been generally supposed. He found them to be less subject to sickness at the earlier and middle portions of life than many other classes of workpeople, although their mort. was higher. Their expectation of life he found to be only 12 p.c. below the general average of the pop. He deduced the following T. of "Expectation" of Life for Bakers in "Rural Districts, Towns, and Cities ;" but it does not appear very clear from what sources the data were obtained—yet this is a matter of the very first importance :

Expectation of Life for BAKERS.—Rural Districts, Towns, and Cities.

Age.	Expectation.	Age.	Expectation.	Age.	Expectation.	Age.	Expectation.
10	47.9816	33	30.2455	56	16.2677	79	5.1618
11	47.1704	34	29.5094	57	15.7171	80	4.8168
12	46.3562	35	28.7434	58	15.1686	81	4.4904
13	45.5423	36	27.9398	59	14.6187	82	4.1749
14	44.7323	37	27.0927	60	14.0632	83	3.8877
15	43.9287	38	26.2210	61	13.4982	84	3.6195
16	43.1353	39	25.3429	62	12.9205	85	3.3687
17	42.3547	40	24.4756	63	12.3405	86	3.1343
18	41.5807	41	23.6309	64	11.7673	87	2.9159
19	40.8068	42	22.8249	65	11.2086	88	2.7123
20	40.0268	43	22.0738	66	10.6718	89	2.5249
21	39.2355	44	21.3936	67	10.1629	90	2.3531
22	38.4274	45	20.7992	68	9.6779	91	2.1991
23	37.6134	46	20.3060	69	9.2130	92	2.0655
24	36.8031	47	19.9306	70	8.7647	93	1.9494
25	36.0057	48	19.6301	71	8.3292	94	1.8455
26	35.2305	49	19.3638	72	7.9028	95	1.7256
27	34.4857	50	19.0910	73	7.4856	96	1.5897
28	33.8398	51	18.7710	74	7.0775	97	1.3888
29	33.0556	52	18.3646	75	6.6637	98	1.1666
30	32.3572	53	17.8918	76	6.2872	99	.8333
31	31.6605	54	17.3722	77	5.8995	100	.5000
32	30.9597	55	16.8251	78	5.5238		

BALANCE-SHEETS.—All cos. regis. under the Joint-Stock Cos. Regis. Act, 1844, were called upon to file a bal.-sheet at the Registrar's office at least once in every year ; and

many of the sheets so filed by the ins. cos. were very extraordinary documents. The bal.-sheets so returned were laid before Parl. and on several occasions were ordered to be printed. The following are the chief of the printed returns :—

1849—Return containing a copy of every account regis. by such cos. from the date of passing of Act down to 20 April, 1849. [This return was reprinted in 1852.]

1852—Return of all accounts from 20 April, 1849 to 5 Feb. 1852.

1856—Return from last-named date, to 4 March, 1856.

1857—Return from last-named date to Feb. 1857.

1863—Return from last-named date down to the commencement of Cos. Act, 1862.

Mr. W. T. Thomson, in his pamphlet, *On the present position of the L. Assu. interests of Gt. Brit.*, pub. 1852, and wherein he was strongly advocating the necessity of some legislative supervision of ins. associations, said :

This wholesale pub. of unexplained bal.-sheets is in my opinion unfair, and of no practical good effect. It is *unfair*, because, according to the nature of the constitution and early progress of an assu. co. its bal.-sheet, unsupported by any other evidence, is open to unfriendly and damaging criticism : *although the office may be well established and soundly conducted.*

The pub. of the results of the periodical investigations as now required no doubt in some sort meets the objection then prevailing in Mr. Thomson's mind ; but even this does not remedy the injustice done to a young office in having its accounts brought into indiscriminate comparison with those of older offices.

Mr. Francis Whitmarsh, then Regis. of Joint-Stock Cos., speaking of ins. cos. before a select committee of 1853, said :

As to their bal.-sheets they are perfectly nugatory. They are not understandable. I have thought it over a great deal, and I have thought that if it could be devised by the Legislature, that if any form of bal.-sheet could be adopted upon which the returns should be made out, and some stringent measure adopted also for the purpose of compelling the return of the actual bal.-sheet that has been laid before the subscribers, being returned to the registry office, it would then open the eyes of the public a great deal as to the state of the cos., *as half the bal.-sheets of those assu. cos. must be manufactured for the purpose of regis.*

Under the Joint-Stock Cos. Act, 1862, such cos. as were regis. with art. of asso. of their own,—*i.e.* containing a legal constitution for the guidance of their affairs,—were not required to regis. any bal.-sheet ; but all such cos. as regis. thereunder *without art. of asso.* were required ann. to make up and regis. a form of balance-sheet as there given in table A (first schedule). All ins. cos. completely regis. under the Act of 1844 were required to regis. under this Act, but not to deposit copy of their deed. This special exemption prob. relieved them from the onus of the form of bal.-sheet required of other cos.

The *Life Assu. Cos. Act*, 1870, requires (sec. 5) every life ins. asso. to prepare at the expiration of its financial year a statement of revenue account, and a bal.-sheet in the forms prescribed by the Act. These forms we have given *in extenso* under ACCOUNTS OF LIFE OFFICES. They have to be deposited with the Board of Trade (sec. 10), and the Board of Trade is to lay the same before Parl. These returns and bal.-sheets will no doubt be printed, and widely circulated in various forms. To this there can be only one serious objection—*viz.*, the placing the returns of very young offices in contrast with those of older ones. This injustice may be obviated by adopting a *chronological* arrangement like that adopted by the *Review*, minus its errors. [ACCOUNTS.] [ACTUARIAL REPORT.] [ANNUAL RETURNS.]

BALDASSERONI, DEL SIGNOR ASCANIO, Judge of the Revenue Court at Leghorn, pub. in Florence in 1786, *Trattato del l'assicurazione Maritime, del Cambio Maritime, dell' Avaria, e lege e Costumi, etc.* 2nd ed., 1801. Of the second ed. of this work, the first two vols. are devoted to the contract of ins. ; the third vol. is devoted to Cambio Maritimo, or bottomry and *respondentia*, with a collection of the then recent decisions of the Rota Romana, of the Rota Civile de Genoa, of the Consoli di Mare di Pisa, and of the Rota Fiorentina. The 4th vol. is devoted to jetson, averages, and contributions, with a collection of the opinion of lawyers and of decisions of the different Courts before mentioned. There is a 5th vol. on collateral subjects. There is much acuteness and learning displayed in the work, and the arrangement is very good.

BALDERSTON, J., was Sec. of the *Ins. Co. of Scotland* in 1843.

BALDWIN, D.—See Lond. branch *United Assu.*, 1872.

BALDWIN, W., pub. in 1829, *A View of the Rise, Progress, and Probable Decline of the Equitable Assu. So., addressed to the Insurers in the Equitable, and the Ins. Offices of Lond.* [EQUITABLE INS. SO.]

BALFOUR, ROBERT, late Sec. of *City of Glasgow*, which position he held from 1846 down to 1869, when he died suddenly of scarlet fever, after two days' illness. Like many other high officials of Scotch ins. offices, he had been trained to the profession of public accountant. He was a gentleman of considerable attainments, and had been offered higher positions in his own and other offices. He was much respected in the ins. profession. Mr. Balfour was, we believe, Act. of the *Mut. Accumulation L.* from 1844 to 1849.

BALFOUR, T. GRAHAM, M.D., Grenadier Guards, etc., pub. in 1847, *Statistical Report on the Sickness and Mort. among the Troops serving in the Madras Presidency; prepared from Official Documents, printed by order of the Madras Government.* This report was printed

in the *Edin. Med. and Surg. Journal*, No. 172, as well as in pamp. form. This was the first of a long series of reports and investigations into the sanitary condition of the army in which Dr. Balfour has been engaged. See ARMY.

BALL, CHARLES P.—Fire manager of the *Royal Exchange* since 1865. He entered the office as a junior in 1845, and after passing through all the departments of the fire branch, received his present appointment on the retirement of Mr. Bird.

BALLAST, is a mass of weighty material placed in the bottom of a ship or vessel, to give her *stiffness*: that is, to increase her tendency to return to the upright position when inclined or *heeled over* by the force of the wind or other cause. Ordinary ship's ballast consists of shingle (the coarse gravel of the sea-beach), stones, etc. In the Royal Navy iron ballast alone is used. When a ship has no other loading, she is said to be *in ballast*.—*Brande.*

BALLASTAGE.—A toll paid for the privilege of taking up ballast from the bottom of a port or harbour.

BALLOONING, DEATHS FROM.—The 3500 ascents which have been made have only caused 15 deaths.—*Glaisher*, 1870. Vincent says the fatal accidents have been estimated at 2 or 3 p.c.

BALSA (Spanish).—A species of float or raft, chiefly used on the coasts of South America for landing goods through a heavy surf.

BANBURY CATTLE PLAGUE INS. CO.—This Co. was founded in 1865, with an authorized cap. of £48,000. Its object being to provide means of ins. cattle against the plague, which was then raging in many parts of England with great severity.

BANCO.—A word of Italian origin, signifying in commerce a Bank; and commonly employed to describe the Bank of Venice. *Banco* is also used to distinguish Bank money from ordinary currency in Hamburgh and other parts of the North of Europe.

BANGOR MUTUAL MARINE.—This Co. or Club was projected in 1852 at Bangor—what progress it made we cannot now trace.

BANK.—The name is derived from *banco*, a bench, erected in the market-place for the exchange of money. The first is said to have been estab. in Italy A.D. 808, by the Lombard Jews, who afterwards founded the principle of Banking in Gt. Brit. In Germany it is not unusual to designate life ins. asso., banks,—the *Gotha Bank* being the largest life ins. asso. in Germany. The deposit system of ins. bears some analogy in its working to the bus. of banking.

BANK DISCOUNT.—The rate of *Bank Discount* (which must be understood as the *minimum* rate for good mercantile bills), as from time to time fixed by the Bank of England, regulates in some measure the price of money—that is, the rate of interest for money in England, for whatever purpose required: as it also affects the price of funds and stocks generally. It has less influence over the rates of loans on real estate than on any other class of security. The whole subject will be discussed under INT. FOR MONEY.

BANK OF DEPOSIT.—This was a scheme founded by Mr. Peter Morrison, and worked in connexion with the *National Assu. Investment*, under which head we shall have occasion to refer more in detail to its operations.

BANK LIFE ASSU. CO.—A Co. under this title was projected, and prov. regis. on the 14th Feb., 1855. It never appears to have proceeded beyond this step.

BANK OF LONDON AND NATIONAL PROVINCIAL INS. CO.—This Co. was prov. regis. under the Joint-Stock Cos. Act, 1844 (7 & 8 Vict. c. 110), on the 28th April, 1856. On the 14th July, 1856, the Joint-Stock Cos. Act, 1856 (19 & 20 Vict. c. 47), was passed. On the 24th July, D. of Sett. of Co. was tendered for regis., but the Registrar of Joint-Stock Cos. refused to regis. it, considering that he had no power to do so, in consequence of the new Act. The shareholders accordingly executed a deed of mutual release of their rights under the old D. of sett., and on the 24th Aug., 1856, they executed a fresh D. of sett., by which the Co. was reconstituted as an unregis. F. and L. Ins. Co.; but provision was made for the execution of a supplemental deed, if authorized by a special general meeting, in case any Act of Parl. should be passed enabling the Co. to be regis. The Co. never was regis.

The promoters of the Co. were Mr. Benjamin Scott, the present City Chamberlain; Mr. Edmund Clench, and Mr. Thomas Walker. A body of shareholders was brought together, which prob. in point of wealth and influence had hardly ever been equalled. The Rt. Hon. Thomas Milner Gibson, M.P., afterwards President of Board of Trade, was one of the trustees. Mr. Clench was the Manager and Sec. of the Co. The cap. of the Co. was £1,000,000, in shares of £5. The Co. was known by the short title of *Bank of Lond.*

The bus. of the Co. was orig. founded upon that of the *National Provincial Life*, which had been estab. in 1851, and upon that of the *National Provincial Fire* founded, in 1852. In 1856 it took over the bus. of the *Falcon Life*; and of the *Durham and Northumberland F. and L.* In 1857 it took over the bus. of the *Anchor F. and L.*; and in 1858 the bus. of the *Merchants and Tradesmen's*.

In 1858 the bus. of the Co. was disposed of—it was understood in consequence of some disagreement in the management. The fire bus. was trans. to *Liverpool and Lond.* for a cash payment. The life bus. was trans. to the *Albert* by way of amalg. The deed of

amalg. was dated 7th Oct., 1858. The *Albert* was to take over the goodwill and connexions, and also the assets and liabilities of the *Bank of Lond.*, under the following covenant :

And the *Albert* shall at all times save harmless and keep indemnified the *Bank of Lond.* and all trustees thereof, and the Board of Directors and all other proprietors thereof, from and against the same, and from and against all actions, suits, and proceedings in respect thereof, and all costs and charges connected therewith, but always excepting fraudulent default.

On the stoppage of the *Albert* in 1869 it was found that some of the annu. contracts, orig. made by the *Bank of Lond.* were still running, and these became thrown back upon this Co. Hence it became necessary to place it in liquidation. On the 22nd Jan., 1870, an order was made for winding up the *Bank of Lond.* Co. ; and a call of 7s. 6d. p. share was made in 1871, which it was believed would be sufficient to provide for all liabilities under contracts not affected by novation.

But another and a larger question has arisen, viz., whether, under the clause of the amalg. deed above recited, the *Albert* Co. was not bound to indemnify the shareholders of the *Bank of Lond.*, not only against all calls made upon them, but also against the expenses of winding up. This question came before Lord Cairns, the Arbitrator, acting under the *Albert* Arbitration Act, 1871 ; and he has decided that the *Albert* Co.'s indemnity is not an *unlimited* one, as had been contended ; and that the *Bank of Lond.*, and other cos. similarly placed, could only rank as ordinary creditors upon the *Albert* under the preceding indemnity, and not for the costs of winding up.

A question arose in this case as to whether the amalg. with the *Albert* was not altogether *ultra vires*, by reason of a deficiency of powers in the orig. deed of the *Albert*, and which only became amended by special resolutions passed in 1860, or nearly two years after the amalg. with the *Bank of Lond.* was carried out. It is instructive to note the judgment of Lord Cairns on this point :

Now I have said there was no authority to enter into a contract of amalg. of this kind, taking any ins. and annu. in mass. It appears to me the contract of amalg. can be maintained from the circumstance which subsequently happened, because it was clearly brought home to the *Albert* by their reports and by the accounts of their bus. that these pol. and annu. had been taken over. But the utmost deduction that can be drawn from this is that the *Albert* is bound retrospectively to approve of these contracts of ins. and these grants of annu. in the same way as if they had been issued severally and singly in the first instance by their own co. That extent of approval and acquiescence must be imputed to the *Albert* retrospectively, but nothing beyond that.

Fifteen shillings in the £ has been paid to all admitted creditors, and it is not expected that there will be any further call.

BANKERS' INSURANCE CO.—This Co. was projected in 1851, by Mr. Wm. S. Northhouse ; but it does not appear to have elicited the sympathies of the powerful class from whom it proposed to obtain its support.

BANKING INDEMNITY, AND ARMY, NAVY, AND GENERAL MONETARY ASSU. CO.—A Co. under this very diffuse title was prov. regis. in July, 1855. Its object was to insure bankers and army, navy and other agents against business losses. The projector was a civil engineer. The Co. did not reach complete regis.

BANKRUPTCY.—The condition of a trader (and since 1861, of a non-trader), declared by legal authority unable to meet his engagements. Bankruptcy in England has been regulated by a variety of statutes from 34 Henry VIII. (1542), down to 32 & 33 Vict. c. 71 (1869).

Many curious and highly technical questions relating to pol. of ins. have arisen and still arise under the Bankruptcy Laws. We propose briefly to notice some of the leading points which have been estab. in relation to each branch of ins. pol., and the principal enactments in force affecting the same.

It may be stated as a general principle, that where a pol.-holder is adjudged a bankrupt his pol. of whatever description, together with all his personal estate, present or future (up to the time of obtaining his discharge), become absolutely vested in his trustees in bankruptcy ; and they have the like remedies to recover moneys thereunder as he would have had if he had not been adjudged a bankrupt.

By 24 & 25 Vict. c. 134 (1861), non-traders as well as traders were made subject to the Bankruptcy Laws ; and by s. 131 of same Act, it was provided that if any bankrupt had contracted, before the filing of a petition for adjudication, any debt payable by way of instalments, the creditor might prove for the amount of such instalments remaining unpaid at the time of such petition.

The Bankruptcy Act of 1869—32 & 33 Vict. c. 71—consolidated and amended the laws of bankruptcy in England. It came into force on 1st Jan., 1870. By s. 5, it provides that a partnership, asso., or a co., whether corporate or regis. under Cos. Act, 1862, shall not be adjudged a bankrupt. All such have to be brought within the provisions of the Cos. Act, 1862, for winding up joint-stock cos.

Annuities.—By s. 54 of 6 Geo. IV. c. 16 (1825), any annu. creditor of a bankrupt was entitled to prove for the value of such annu. ; the Commissioners to ascertain the value, " regard being had to the orig. price given for the said annu., deducting therefrom such diminution in the value thereof as shall have been caused by the lapse of time since the grant thereof to the date of the commission." The table of mort. to be employed for the purpose was not indicated by the Act.

By the 12 & 13 Vict. c. 106, s. 76 (1849), the preceding s. was re-enacted somewhat more in detail.

In *Ex parte Fisher* (1826), it was decided in valuing an annu., the altered state of health of the annuitant could not be taken into consideration. While in *Ex parte Webb* (1825), it was held, that the state of the money market was not a circumstance that could affect the rule.

In the case of *Ex parte Varnish*, which arose in 1841, the facts were as follows: A borrower contracted for a loan of £7000 at 9 p.c. by way of annu. and by the annu. deed covenanted to pay ann. £924, which was the amount of the int., together with the prems. on the ins. of his life for £7000. The deed also contained a covenant by the borrower to do what was necessary to enable Varnish, the lender, if he thought fit, to ins. the borrower's life, with a proviso that any part of the annu. (not being less than one-seventh part) might be redeemed on payment of £1000 for every seventh part redeemed; and that on redemption of whole, Varnish should assign to the borrower any pol. effected on his, the borrower's, life. The borrower became bankrupt. *Held*, that Varnish might prove for the full value of annu. without giving up the pol. effected by him. But in *Ex parte Tierney*, decided in 1830, it was held that an annu. creditor who had a pol. of ins. could not prove without a sale of the pol.

Fire Policies.—In *Marks v. Hamilton* (1852), the following were the facts: A person discharged by the Insolvent Debtors' Court as an insolvent debtor effected an ins. against fire on some property acquired by him before the insolvency. The property having been destroyed by fire, the order for his discharge was afterwards annulled on the ground of fraud, and the insolvent adjudged to undergo 12 months' imprisonment from the date of the vesting order. He then brought an action on the pol., to which the Co. pleaded that he had no insurable interest in the property; but it was *Held*, that the action lay.

In the case of *Lees v. Whiteley* (1866), the following state of facts arose: A firm executed a bill of sale to A., of machinery, and covenanted to ins. and keep it insured from loss by fire in some office to be approved of by A. during the continuance of the security, and in default with liberty to him to ins. and charge the prem. on his security. The ins. was effected in the names of the firm, and the machinery was afterwards destroyed by fire. On the day of the fire the firm assigned all their property to trustees for the benefit of their creditors. The assignment, which was intended to operate under the Bankruptcy Act, 1861, was executed by the several partners and the trustees, but was destroyed before its execution by any creditor. A. gave notice of his claim to the ins. office, having previously had notice of the deed of assignment and of its destruction. The firm afterwards became bankrupt. *Held*, that the benefit of the pol. did not pass to A. under the covenant to ins., and that the execution of the assignment was an act of bankruptcy, and A. having had notice could not claim against the assignees in bankruptcy.

Mr. Bunyon lays it down (*Law of F. Ins.*, 1867), that "a bankrupt, or insolvent, possesses an insurable interest in the bankrupt estate, although vested at law in his assignees, and although the property may be concealed from his creditors," prob. on the authority of the case of *Marks v. Hamilton*.

According to American law, where the insured is decreed a bankrupt, this divests him of his property, and vests it in his assignee, and is "alienation, and defeats the pol."—*Flander's Law of F. Ins.* He supports this position by the cases of *Adams v. Rockingham M. F. Ins. Co.*, and *Barnes v. The Union Mut. F. Ins. Co.* [ALIENATION.] [ASSIGNMENT OF INS. POL.]

Friendly Sos.—By 12 & 13 Vict. c. 106 (1849), s. 167, if any person appointed or employed officially in a so. estab. under the Acts relating to F. Sos. and entrusted with the keeping of the accounts, or having in his hands or possession, by virtue of his office or employment, moneys or effects belonging to the so., or deeds or securities relating to the same, becomes bankrupt, the Court may, upon application of the so., order payment and delivery over to the so. of the moneys or other things belonging to the so., and also payments out of the bankrupt's estate of all moneys remaining due which he received by virtue of his office or employment, before any other of his debts are paid and satisfied.

Life Policies.—By 24 & 25 Vict. c. 134 (1861), s. 154, if any bankrupt shall at the time of adjudication be liable, by reason of any contract or promise, to pay prems. upon any pol. of ins., or any other sums of money, whether yearly or otherwise, or to repay to or indemnify any person against any such payments, the person entitled to the benefit of such contract or promise may, if he think fit, apply to the Court to set a value upon his interest under such contract or promise, and the Court is required to ascertain the value thereof, and to admit such person to prove the amount so ascertained, and to receive dividends thereon. No T. of mort. or rate of int. are indicated for the basis of valuation.

A pol. of ins. effected by a bankrupt upon his own life at an ann. prem. passes to his trustees in bankruptcy, however small the apparent value of it may be at the time of his bankruptcy, and although there are considerable arrears of prem. due upon it; and if instead of delivering it up as part of his effects, he secretly assigns it to another person who pays the arrears of the prems., and upon the death of the bankrupt receives the sum insured, this sum, deducting the amount of the arrears so paid, may be recovered by the trustees as money received to their use. This was so held by Lord Ellenborough in *Schondler v. Wace* in 1808.

In the case of *Ex parte Andrews*, heard 1816, a trader assigned to a creditor as security for his debt a contingent interest, limited on the event of his wife surviving her mother. The creditor ins. the life of the wife, and she died; and the husband subsequently became bankrupt. The creditor's proof under the commission was limited to the difference between the sum recovered on the pol. and the full amount of his debt. The sums paid by him for prems. were also allowed in the account. This case was the converse of *Godsal v. Boldero*.

In the case of *Wills v. Wells*, heard 1818, the following set of facts occurred: A. effected an ins. on the life of B., and after an act of bankruptcy, assigned the pol. to C., who was aware of A.'s circumstances at the time. On the death of B. it was discovered that his condition of health, if it had been accurately known, would have rendered his life uninsurable. The office demurred to payment; but on a memorial presented by A., the Co. agreed to pay half the sum for which the life was ins. as a gratuity, which C. received, and the pol. remained in the hands of the Co. In an action by the assignee in bankruptcy of A. against C. to recover the value of the pol., it was *Held*, he (the assignee) was only entitled to the parchment on which the pol. was written, and not to the sum paid by the Co. to C., because that was a mere gratuitous and voluntary payment.

The assignment of a pol., *without notice to the office*, does not prevent the pol. from passing to the trustee in bankruptcy. This was so held *Ex parte Tennyson*, 1832.

In *Ex parte Wood* (1843), a mortgagee of a pol. created an equitable sub-mortgage of it by deposit, and became bankrupt. No notice of the orig. mortgage was given to the office, nor was any notice of the sub-mortgage given either to the office or to the mortgagor: *Held*, that the sub-mortgage was invalid as against the assignees.

In *Ex parte Barnett* (1845), a mortgagee of a pol. deposited it by way of sub-mortgage, and gave notice of the sub-mortgage to the ins. office, but not to the orig. mortgagor: *Held*, that this was sufficient to take the policy out of the reputed ownership of the mortgagee.

It was held in the case of *Saunders v. Best*, heard 1864, that a surety who has covenanted to pay prems. due on a pol. of ins. in the event of his principal not doing so, cannot maintain an action against his principal for prems. paid after the principal has obtained his certificate under the above section.

In the case of *Edwards v. Martin* (1865), it was held that a casual remark addressed to the sec. of an ins. co. by a pol.-holder, to the effect that he had deposited his pol. as a security, was not notice to the co. sufficient to take the pol. out of the operation of the Bankruptcy Laws, as they stood prior to the Act of 1869.

It was held in the case of *Mitcalfe v. Hanson* (1866), that a covenant to pay recurring prems. on a life pol. is an absolute covenant, and does not constitute a liability to pay money on a contingency within 12 & 13 Vict. c. 106, s. 178. The only contingency being that of the continuance of the life insured, it is an absolute covenant to pay, not upon, but until the happening of a certain event, so that the contingency specified does not create but puts an end to the liability. The statute contemplated only one single liability arising upon one contingency, and that cannot apply to a liability to make periodical payments, nor is there any provision in the statute which gives such a liability the character of an annu.

In *Re Webb's pol.* (1866), Webb having mortgaged a pol. on his life, afterwards became bankrupt, and died four years after the bankruptcy. The mortgagee thereupon gave notice to the ins. office and claimed the proceeds of the pol. No previous notice had been given of the mortgage or of the bankruptcy: *Held*, that notice after the bankruptcy was insufficient, and that the pol. remained in the order and disposition of the bankrupt.

In the case of *Green v. Ingham* (1867), a bankrupt delivered a pol. of ins. on his life to the defendant, with the intention of giving him an interest in the money receivable under the pol. as security for a debt due to him from the bankrupt. No notice of the transaction was given to the office: *Held*, that the pol. itself, as well as the money receivable under it, was in the order and disposition of the bankrupt, and that therefore the assignee in bankruptcy was entitled to recover that document from the defendant.

By a humane law, originated, we believe, in the State of New York, in 1840, and since adopted in Canada, in Australia, and lastly in Gt. Brit., in 1870, life pol. may be effected for the benefit of wife and children in such a manner as to place them beyond the grasp of the Bankruptcy Laws. But of course such ins. must be effected in good faith; and the required formalities must be complied with. The entire subject will be discussed under NOMINATION LIFE POL.

In most life pol. it is provided, that in case of suicide the pol. shall be void, except it has been *bonâ fide* assigned to any third party. An assignment by bankruptcy is not the kind of assignment contemplated by this exception. The interest there described means one acquired by contract upon a valuable consideration, not one arising merely by operation of law. An assignment in bankruptcy is made no doubt in consideration of past debts due from the assignor; but it does not confer an interest within the meaning of the exception. The exception was introduced in order to enable the assured to deal with the pol. as a matter of merchandize; and the expression "any third party," cannot be construed to mean a person who by operation of law becomes the assignee of the

estate of the man whose life is insured, as a mere personal representative, to collect and administer the estate. *Jackson v. Forster* (1859).

[ASSIGNMENT OF POL.] [MARRIED WOMEN'S PROPERTY ACT.] [NOMINATION POL.] [NOTICE OF ASSIGNMENT.]

Marine Policies.—In 1746 there was passed an Act for amending the laws relating to bankrupts—the 19 Geo. II. c. 32, s. 2 of which recites :

And whereas merchants and other traders frequently lend money on bottom-ree, or at respondentia, and in the course of their trade frequently cause their ships or vessels and the goods and merchandizes loaded thereon to be ins. ; and where commissions of bankruptcy have issued against the obligor in such bottom-ree or respondentia bond, or the underwriter or assurer in such assu., before the loss of such ship or goods in such bond or pol. of ins. mentioned hath happened, it hath been made a question whether the obligee or obligees in such bond, or the assured in such pol. of ins., should be let in to prove their debts, or be admitted to have any dividend under such commission ; which may be a discouragement to trade.

For remedy whereof, it was enacted that from and after 29th Oct., 1746, the obligee in any bottom-ree or respondentia bond, and the assured in any pol. of ins. made and entered into upon a good and valuable consideration *bond fide*, should be admitted to claim ; and after the loss or contingency should have happened, to prove his, her, or their debt and demands in respect of such bond or pol. of ins. in like manner as if the loss or contingency had happened before the time of the issuing of the commission of bankruptcy against such obligor or insurer ; and should be entitled unto, and should have and receive a proportionate part, share and dividend of such bankrupt's estate, in proportion to the other creditors of such bankrupt, in like manner as if such loss or contingency had happened before such commission issued.

In the case of *Bise v. Dickason* (1786), it was held that, where a bankrupt had underwritten a pol. to a broker acting upon a *del credere* commission, and a loss upon the pol. happened before, but was not adjusted till after the bankruptcy, the broker may deduct the amount of the loss from the debt which he owes to the bankrupt's estate.

In the case of *Minett v. Forrester* (1811), it was held that an ins.-broker who was indebted to the assignees of a bankrupt underwriter for prems. could not, without an especial authority, set off against the debt sums due from the underwriter for returns of prems., whether the returns became due before the bankruptcy, or after it.

In the case of *Grant v. Hill* (1812) the defendant having, for securing a debt, taken an indorsement of the bills of lading of certain cargoes, which indorsement was void, because made after an act of bankruptcy committed by the indorser, effected for his own account an ins. on the cargoes ; and a loss happening, he recovered against the underwriters on a count averring interest in the assignees of the indorser, then a bankrupt. *Held*, that the assignees could not recover this money as had and received by the defendant for their use.

In the case of *Glennie v. Edmunds* (1813), it was decided that an underwriter cannot set off, as a mutual credit, against a loss accruing after the bankruptcy of the insured, prems. of the same and other pol. due before the bankruptcy from the insured, who was himself his own ins.-broker in effecting those pol.

In 1825, by the Bankruptcy Amendment Act, 6 Geo. IV. c. 16, the same provision was re-enacted ; but it was afterwards held, in the case of *Andrews v. Emmet*, that where a creditor had obtained part satisfaction of his debt, he could only be allowed to prove for balance, *plus* sum paid for ins. and expenses.

By the 12 & 13 Vict. c. 106 (1849), s. 174, it is enacted that the insured in any pol. of ins. made upon good and valuable consideration shall be admitted to claim, and after the loss or contingency shall have happened, to prove his debt or demand in respect thereof, and receive dividends with the other creditors, as if the loss or contingency had happened before the issuing of the fiat or the filing of the petition for adjudication against such insurer ; and the person effecting any pol. of ins. on ships or goods with any person (as a subscriber or underwriter) having become or becoming bankrupt, shall be entitled to prove any loss to which the bankrupt shall be liable in respect of such subs., although the party so effecting the pol. was not beneficially interested in such ships or goods, in case the person so interested is not within the United Realm.

In France, if an insurer or underwriter fail whilst the risk is subsisting, the insured has a right to demand the cancelling of the pol. unless good security be offered by the insurer or his creditors. But in order to appreciate the full force of this custom, it must be remembered that the prems. are only paid on marine ins., to which this custom applies, on the expiration of the risk.

[ASSIGNMENT OF INS. POL.] [BROKERS.] [CLAIMS.] [PREMIUMS.] [SET-OFF.]

BANKRUPTCY MUTUAL ASSU. ASSO.—This Co. was projected in 1852, with some remarkable features. It proposed to grant pol. payable at the expiration of 3 years from date of pol., to the nominee of the insured in case of bankruptcy ; and a further 25 p.c. to the bankrupt himself if he obtain a 2nd-class certificate, and 50 p.c. to those who obtained a 1st-class certificate. A legal difficulty at once suggested itself—namely, whether all such moneys would not of right belong to the estate of the bankrupt, and therefore be for the benefit of his creditors. The Co. did not proceed.

BANNERMAN, JOHN B., F.I.A., Act. and Sec. of *Lond. and Birmingham Life* ; and Manager of *Lond. and Midland Fire*, of which last office he was the founder. Mr.

Bannerman represented the *Consols* in Glasgow, but retired from it in 1861, and accepted the management of the *Birmingham and Midland*; and when that co. merged into the *Birmingham Alliance*, he remained the Sec.

BAPTISM.—The ordinance of admission into the Church, practised by all Christian sects except Quakers.

BAPTISMAL INS.—See CHRISTENING INS.

BAPTISMAL OFFICE OF ASSU., founded in Lond. in the reign of Queen Anne, probably in 1710. [CHRISTENING INS.]

BAR.—An obstruction frequently met with at the entrance to harbours and navigable rivers. A bar, like a delta, usually owes its existence to deposits brought down the harbour or river at the mouth of which it is situated; but it is in some cases apparently silted up from the sea, by the direction of currents and from other causes. A bar is destructive to trade in many cases, inasmuch as it prevents, or delays, the approach of large vessels; involving the waiting for a suitable state of the tide.

BARBADOES.—A West India Island, with a hist. not inviting for ins. enterprise:

1780—A dreadful hurricane, more than 4000 inhabitants perished.

1796—Two great fires—May and Dec.—great destruction of property.

1831—Awful devastation by a hurricane—thousands of lives lost.

In 1840 the *Barbadoes* Mut. Life Co. was estab. in Bridgetown.

1854—Nearly 17,000 persons died from cholera.

1860—Property of about £300,000 destroyed by a fire at Bridgetown, 14 Feb.

BARBADOES MUTUAL LIFE ASSU. SO., estab. in 1840 at Bridgetown. The So. has transacted a small but apparently well-selected bus.; and its operations have been successful. Its bus. is confined exclusively to the ins. of lives resident in the West Indies.

Between 1858 and 1861 inclusive, the sums ins. had been about £40,000 each year. In 1862 the bus. increased by about one-third, and showed signs of further progress. In 1869 the sum ins. reached nearly £90,000. The ann. income of the So. amounted in 1862 to £22,000. In 1871 the income was about £34,000. The no. of pol. in force 30th June, 1871, was 1577, ins. £722,000 sterling. The total assets of the So. amounted to £178,810. The rate of int. on investments had averaged 5 p.c. For the 20 years ending 31st December, 1860, the mort. had been only 1·07 p.c., being much less than the mort. of ins. life in Gt. Brit. In 1859 the rate increased to 2·0: and in 1860 it was 2·3 p.c. Both of these years were regarded as exceptional. In 1866 it was 1·8 p.c.; in 1868, 3·2 p.c.; in 1870, 1·7. For the five years 1866–70, the mort. averaged 2·271 p.c. p.a. for all ages. The increase of mort. during the last five years the Act. attributes to the acceptance of lives through agencies instead of at the head office; and we fancy he is right. The rate of mort. fluctuated considerably in the several years. The average age at which the lives ins. appears to be about 33 years. The average duration of all pol. issued appears to be about seven years; but those that mature to claims about 11 years. The average age at death about 51 years. The following most interesting table of the causes of and ages at death has been compiled for the So. It extends over 30 years, viz., from estab. of So. in 1840 to the end of 1870.

CAUSE OF DEATH.	Ages at Death.											All ages.	Per-centage of each cause to all causes.
	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	61 to 65	66 to 70	71 to 75		
	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	61 to 65	66 to 70	71 to 75		
Zymotic diseases	4	2	8	19	17	16	11	2	3	2	0	84	26·63
Diseases of uncertain or variable seat	0	0	4	2	4	0	6	1	4	0	0	21	6·54
Tubercular diseases	0	0	8	4	6	0	0	0	0	0	0	18	5·37
Diseases of nervous system	1	8	6	4	10	13	19	7	6	0	2	76	23·13
Diseases of organs of circulation	0	0	2	2	5	5	2	0	0	0	0	16	4·64
Diseases of respiratory organs	0	4	5	1	3	0	3	2	6	2	0	26	8·20
Diseases of digestive organs	0	3	8	16	9	5	4	4	2	1	0	52	16·35
Diseases of urinary organs	0	0	0	0	3	2	1	0	0	0	0	6	1·87
Diseases of organs of excretion	0	0	0	0	0	0	0	0	2	0	0	2	·70
Diseases of integumentary system	0	0	0	2	0	0	0	0	0	0	0	2	·70
Debility... ..	0	0	0	0	2	0	0	0	0	0	0	2	·70
Atrophy... ..	0	0	0	0	0	0	3	0	0	0	0	3	·93
Age... ..	0	0	0	0	0	0	0	1	0	0	0	1	·46
External causes... ..	0	0	1	1	0	0	2	2	0	0	0	6	1·87
Not stated	1	1	0	1	2	1	0	0	0	0	0	6	1·63
All causes	6	18	42	52	61	42	51	19	23	5	2	321	
Per-centage of deaths at each group of ages to all ages	1·87	4·67	12·85	15·89	18·69	13·55	17·02	5·85	7·48	1·40	·69		

A separate T. of causes of death has been compiled for the 5 years 1866-70. The percentage of deaths from zymotic diseases has been higher during that period by about 3. The percentage of deaths from tubercular diseases has been lower by about $1\frac{1}{2}$. The percentage of deaths from diseases of nervous system about $3\frac{1}{2}$ less. While those from diseases of organs of generation and the three causes following in the table have about doubled. The percentage of deaths at ages 26-30 is about one-third. In fact, all the ages up to and including 45 show a smaller percentage, and at the older ages an increased percentage. The experience of the officers in the selection of lives, and prob. a more correct classification of the causes of death, have combined to produce these results.

The prosp. says, "The prems. are considerably lower than those charged by any other life office doing bus. in the West Indies, and the bonuses declared have not been equalled by any other assu. so. in the world." The rates are deduced from the *Northampton* T. The ordinary whole-life rates for each 100 dollars (of 4s. 2d. stg.) are annexed :

Age.	Dols. Cts.	
15	2	12
20	2	30
25	2	64
30	2	93
35	3	28
40	3	73
45	4	28
50	5	42
55	6	37
60	7	64

Persons who have not been "acclimated" by a residence of 3 years in the West Indies are charged extra as follows : For 1st year of residence, 2 p.c. on amount of pol. ; for 2nd year, 1 p.c. ; 3rd year, $\frac{1}{2}$ p.c. No extra prem. after 3rd year's residence. Extra prems. are required for residence in other parts of West Indies as follows for every 100 dols. ins. : *Tobago*, 5 p.c. for 1st year ; 4 for 2nd ; 3 for 3rd and subsequent years. *Dutch Guiana*, *St. Lucia*, 4 p.c. for 1st year ; 3 for 2nd ; 2 for 3rd and subsequent years. *Trinidad*, *British Guiana*, *Jamaica*, 2 p.c. for 1st year, and 1 for 2nd and subsequent years. *St. Thomas*, *Prince Rupert's and its environs*, *Dominica*, 1 p.c. for each year. *West Coast of Africa*, 6 p.c. for each year. *South America*, 3 p.c. for each year. *British Honduras*, 6 p.c. for each year. For continuous travelling by sea, 2 p.c. for each year. Twenty-five days' residence at either of the above places are allowed before the extra rate takes effect.

At the bonus distribution in 1866 the amount of rev. bonus allotted to a pol.-holder aged 31 at time of ins., was equal to 80 p.c. of the prems. paid during the quinquennium. In 1871 the bonus was 1 p.c. on the sum ins. and all previous add. thereto.

The management of the So. appears to be extremely careful and prudent. Its Act. is Mr. A. S. Burnett, a Fellow of our Inst. [WEST INDIES.]

BARBARY, in N. Africa, considered to comprise Algeria, Morocco, Fez, Tunis, and Tripoli, with their dependencies. For several centuries piracy upon European commerce was largely indulged in by the maritime pop. of its coasts. The risk of "capture by the Barbarians," for several centuries so commonly ins. against in the various states of Europe, had reference to these practices. We have already spoken of the subject under **ALGERINE PIRATES**, and given an extract of a treaty entered into by Gt. Brit. with a view to the protection of her commerce. It is difficult now to realize the influence exercised upon European commerce, even at a comparatively recent date, by the "barbarians." Magens, writing 1755, says :

The importance of remaining in peace with the States of Africa is great, because England has much, and they have no trade to lose; yet when by coming to a rupture they can make much more by captures than is given in yearly presents to the State, their Deys often cannot withstand the clamours of their people, but are obliged to break with such nation as they please; nevertheless insurers may always underwrite at a lower prem. upon English ships than on any other, as we are more in the way (from Gibraltar and Minorca) to take their cruisers.

BARBEYRAC, JOHN, Professor of Law at Groningen in Holland, and afterwards at Berne ; and a famous mathematician, born 1674, died 1747. He is believed to have pub. at Amsterdam, in 1709 *Traité du Feu, où l'on examine les principales questions de droit naturel et de morale, qui ont du rapport à cette matiere*, of which a 2nd ed. was pub. 1744. He is also believed to have pub. in the same city, in 1714, *Sur la nature du Tort*. Montmort refers to the first-named work, which he says he had lately received from Paris. He says it is "*un Livre de morale*." He praises the author, but considers him to be wrong sometimes in his calculations of changes, and gives an example. Nicholas Bernouilli, in reply, says that the author of the work is M. Barbeyrac ; and agrees with Montmort in his general opinion respecting the book ; but in the example in question he thinks Barbeyrac right and Montmort wrong. The difference in result arises from a difference in the way of understanding the rules of the game.—*Todhunter*. His name very frequently occurs in continental works on *Probabilities*, and *Life Contingencies*. [CHANCE.]

BARBON [or BARTON], DR., was one of the first and most considerable builders of the City of Lond. after the Great Fire of 1666. He is said to have originated Fire Ins. in this country. That plea cannot be admitted in its full force ; but it appears upon sufficient testimony that he "set up" a Fire office for the insuring of buildings and houses in the year following the Great Fire, viz., 1667. [FIRE INS.; HIST. OF.]

BARCELONA, INSURANCE ORDINANCE OF.—The City of Barcelona was a place of trade, populous and opulent, under the Romans. On the fall of the Western Empire, the Peninsula passed for a period under the dominion of the Visigoths. [CODEX VISIGOTHORUM.] At a later date its commerce suffered under the ravages and depredations of the Moors.

As soon, however, as it was delivered from the Saracen yoke, Barcelona was in a great measure repopled with its ancient inhabitants ; and commercial enterprise revived. The wise maxim of not excluding foreigners from their trade appears to have been early adopted by the citizens of Barcelona ; and from the 12th century it was a free port for all the then trading nations.

In the course of the 13th and 14th centuries the merchant vessels of this city traded not only to the ports of the Levant, but also to those situated on the western and northern coasts of Europe—particularly to those of the Netherlands. The people under these influences rose to be the maritime rivals of the Venetians and Genoese. Similar regulations and usages to those known to have prevailed at Pisa and Marseilles, for determining the obligations of owners and masters of vessels and mariners, were in use in Barcelona at a very early date. It is doubtful if they were at first reduced into writing. The earliest document in which we find regulations on maritime commerce is one compiled by the discreet men (*prud'hommes*) of the city, and promulgated by King James I., in the form of an Ordin., in 1258.

In 1238 this King had reconquered Valencia from the Moors ; and in 1250 he promulgated an extensive body of general laws under the title of *COSTUMBRES DE VALENCIA*. But these were far from responding to all the wants of the times ; hence the Ordin. of 1258. With the continued expansion of navigation and commerce, yet new questions arose. The Ordin. of 1258 was found insufficient, and the result was a new one, compiled by Bernard Cabrera, and promulgated by King Peter IV., about the year 1340, under the designation of *Capitolo del Ray en Pere*. In the course of this century, also, the decision of maritime disputes was separated from the ordinary jurisdiction of Barcelona ; and the jurisdiction of *CONSULS OF THE SEA* was instituted. The Ordin. of this period deals with salvages, averages, and the internal gov. of vessels ; but does not make specific mention of marine ins.

Besides laying down the forms of procedure with great exactness, the Ordin. of 1343 contained provisions of importance upon the privileges which creditors might exercise over vessels ; in particular recognizing a distinction between a vessel recently built and not yet put to sea, and a vessel which has already performed a voyage ; and makes this a difference in the rights of creditors—a distinction followed in the more modern legislation of some countries.

It is generally believed, and there is some ground for the belief, that the famous maritime code known as the *Consolato del Mare* was compiled for the benefit of the merchants of Barcelona. The earliest known copy is in the Catalanian language. It is generally admitted to have had its origin in the 13th century—between the years 1226 and 1270. It is remarkable, if this be so, that the preceding Ordin. do not make some mention of it. There is a solution compatible with this state of things—and but one, viz., that the *Consolato* was compiled as a record of the customs of other ports and maritime states—a knowledge of which would become necessary to the estab. of the Consular Courts ; while the Statutes or Ordin. already named were simply home regulations.

It further happens that in the Ordin. of 1343 reference is made in several chapters to *Les Costumes Scrites de la Mar* ; but M. Pardessus thinks that these references were not to what we commonly speak of as the *Consolato del Mare*, an important point upon which we believe he is mistaken.

In Nov., 1435, the magistrates of Barcelona promulgated an Ordin. on maritime expeditions, and on the obligations of the owners, masters, freighters, and crews of vessels. This Ordin. makes express mention of the *Consolato* ; and it is believed that its object was to incorporate into the local jurisprudence some of the provisions of this larger code ; and also some regulations regarding *Marine ins.*—the practice of which had certainly before this period become very general in the ports of the Mediterranean. The Ordin., after reciting the authority of the merchants by whom it was promulgated, proceeds :

The councillors and elders of the said town, to extirpate all frauds and injuries, discussions, and disputes, which may take place in the said town with reference to assu. on ships and other vessels, and on merchandize, effects and goods, and also for the advantage of the assured—Order, That henceforward ships or vessels not belonging to the King's subjects or loans on bottomry made on such vessels are not to be assu. at Barcelona. Disobedience of this law to entail forfeiture of prems., and absence of all remedy against the underwriters.

Ships belonging to the subjects of the King to be assu. up to three-fourths of their value only—such value to be stated in the pol. when the contract is entered into, after an estimation has been made by the Consuls of the sea.

The captains, shippers, or any other person not to assure the said vessels for more than such three-fourths ; and if any one has borrowed on bottomry, these loans must be taken into account in the estimation, and deducted from the assurances, in whole or in part, up to the three-fourths of the value of the vessel, or parts thereof, according to the estimation.

This Ordin. must be regarded as purely *local*,—that is, confined in its operation to the city of Barcelona, and to ships owned by its citizens—none other being allowed to be ins. under its provisions. Yet it is of remarkable interest as being the earliest in which we find any direct mention of *Marine ins.*

About the same period (1435) another Ordin. was promulgated from this city—now

generally known as the *Barcelona* Ins. Ordin. It seems to furnish some presumption of earlier Ordin., for it commences thus: "Whereas in times past but few Ordin. of ins. have been made, which defect wants correction and amendment, etc." Then several of its articles announce that their object is to remedy abuses, and to decide certain controverted points. This is regarded as a *general* Ordin. of marine ins., prob. applying to the Spanish Dominions generally, as distinguished from the preceding one of mere local operation; why otherwise there should have been two Ordin. of nearly the same date would seem inexplicable.

Many of the provisions of the *Consolato* were embodied in this Ordin., which was successively corrected and enlarged in the years 1436, 1458, and 1461. It seems, however, that all these Ordin. were regarded as experimental, and the whole were recast into the Ins. Ordin. promulgated in 1484.

In 1481, the Crown of Aragon being united to the Spanish Monarchy by the marriage of Ferdinand the Catholic with Isabella, heiress of Castile, the Catalans became subject to the laws of Spain; and hence soon after this period we do not hear more of the *Barcelona* Ordin.; they merge naturally into those of Spain—which will be presented to the reader in due course. [AVERAGE, MARITIME.] [BOTTOMRY.] [CONSOLATO DEL MARE.] [SPAIN, INS. ORDIN. OF.]

BARCLAY, ARCHIBALD C., Man. Director of *Equitable* Fire from 1857 down to its amalg. in 1860. He was also the promoter of the *United Equitable* Life, projected in 1858.

BARE POLES.—The masts without any sails upon them, the ship being at sea. Under "bare poles" in general implies that the wind is so high that no sail can be exposed to it.—*Brande*.

BARFOOT, H. C., was Sec. of *Prudential* from 1852 to 1856.

BARGAINEE.—A person to whom a bargain and sale is made. *Bargainer*, or *Bargainor*, a person who makes a bargain and sale.

BARGAINS, INSURANCE OF.—It is most prob. that this system of ins. originated in Holland. We find the first notice of its practice there. The arguments in support of it we may give in condensed form as follows:—Those that buy on a certain bargain cannot know what profit or loss they are to have on what they have so bought until they re-sell; and the price of goods may rise or fall much at the expiration of contracts: so that they may chance to lose considerably, when at the time of making the contract they expected to have made a great profit. Prudent people, therefore, who do not choose to risk a great deal on goods which they think must rise or fall considerably, do not care to buy or sell on a certain bargain, but choose rather to give an agreed sum to somebody, who in consideration thereof obliges himself to deliver or receive the goods in question at an appointed time and at a limited price, if they think proper to insist on his delivering or receiving them; *on condition that if at the appointed time they do not request the fulfilling of the contract, the sum given will be lost, and the contract void.*

The sum given is called *prem.*, and the liberty that the giver of the prem. has to have the contract fulfilled or not, is called option, and the contracts are made to the *bearer*. Here is one of them—a contract to *deliver*—very much in some respects after the nature of a short form of *marine* policy:

I, the underwriter, confess to have received of the bearer the sum of 150 guilders current money, against which I engage and bind myself to *deliver* from henceforth at any time until the . . . , that day inclusive, 10,000 lbs. of good and deliverable Dutch-made starch, at the price of 16 guilders current money for every 100 lbs. to be paid in ready money, and as customary; but if the bearer of this does not give me notice that I am to deliver him the said 10,000 lbs. of starch between this day and the . . . , that day inclusive, I shall be free, and discharge this present contract, and the prem. will be mine, and I shall never be obliged to restore the same, nor shall ever anybody be entitled to reclaim the same.—*Signed, etc.*

These contracts, either to *receive* or *deliver*, might be had during the last century ready printed of the stationers in Amsterdam, and the blanks needed only to be filled up with the sum given, the quality and quantity of the goods, the price and time of delivering and receiving. The interest of him who gave the prem. for *delivery* was that the goods should *rise*; and the interest of him who gave the prem. for *receiving*, that the goods should fall. These contracts were sold and resold at pleasure in Amsterdam, without any indorsement or guarantee of those who sold, *when they were signed by good and known people.*—Ricard's *Negoce d'Amsterdam*.

This was no doubt a species of gambling pure and simple. The takers of prem. of this sort, says Weskett, very often engage themselves to much more than they think; for there often happen such unforeseen accidents in trade, that the goods they bind themselves to deliver or receive rise or fall from 25 to 30 p.c. during the time of their engagement: besides, there are a thousand *artifices* practised in this way of traffic, and very often *roggeries*; so that whoever launches into it too far is almost sure to be ruined. It is a great deal better to *give* than to *take* prem., because he that gives the prem. is under no engagement, and loses nothing more than his prem. in case the goods do not arrive to the price he imagined.

Bargains of a somewhat similar character were also made in Holland upon East India Cos. Stock of the Chamber of Amsterdam; the West India Cos. ditto; and the East India Cos. Stock, although it was prohibited at Amsterdam to sell any; and these

bargains were covered by ins. So contracts were likewise very frequently negotiated there in the same manner for most sorts of goods, when they either began to grow scarce, or that there was great plenty of them, provided the same could be ascertained at a certain value or goodness. Similar ins. were also frequently made in England on events, such as hostilities, war, peace, etc., which might occasion a rise or fall in the price of stocks. [GAMBLING INS.] [INS. WAGERS.]

Speculative ins. were made to a large amount in Lond. in 1772, by Sir George Colebrooke and his associates, on the rise of the price of alum to £30 p. ton within six months; which they attempted to monopolize, and thereby raise the price as they pleased, and also to recover from the insurers; but the scheme failed, as may be seen by reference to the law cases of that period. The Act passed in 1774 did not reach ins. of this class.

The nearest approach to this class of dealing in more modern times is that of "Time-Bargains" on the Stock Exchange, which had been forbidden in 1734 by 7 Geo. II. c. 3. s. 1; but which again was repealed in 1860 by 23 Vict. c. 28. [STOCK, INS. OF.]

BARGE (Low Lat. *barga*).—A general name given to flat-bottomed craft of a certain size employed on rivers and canals. [LIGHTER.]

BARK OR **BARQUE** (Low Lat. *barca*).—A term applied rather vaguely to square-rigged merchant vessels. A bark has three masts, which do not rake; but beyond this there appears to be no special mark to distinguish it from any other merchantman. A bark, however, is never a steamer.—*Brande.*

BARLAS, JAMES, Sec. of *Scottish Union*, which position he has occupied for many years.

BARLOW, EDMUND, was for a time Manager of *York and Lond.* He was trained in the *Atlas*.

BARLOW, PETER, pub. in 1814, *New Mathematical Tables, containing the Factors, Squares, Cubes, Square Roots, Cube Roots, Reciprocal and Hyperbolic Logarithms of all Numbers from 1 to 10,000. Tables of Formulae, etc.* The work has a good reputation among actuaries. In 1840 another ed. was pub. under the superintendence of the Society for Diffusion of Useful Knowledge.

BARNARD'S ACT.—An Act passed in 1734 (7 Geo. II. c. 8), at the instance of Sir John Barnard, entitled, "An Act to prevent the infamous practice of Stock-jobbing." The Act was repealed in 1860. [GAMBLING INS.]

BARNES, A. W., Act. of *Mitre* from its commencement down to 1850.

BARNES, EDWARD G., Sec. of *Law Property* from 1854 down to his death on 7th Feb., 1872, aged 50 years. Mr. Barnes was by profession a solicitor. He had been in bad health for several years.

BARNES, THOMAS, was Sec. of *Bristol Marine*.

BARNES, WILLIAM, late Superintendent of the Ins. Depart., State of New York, and now consulting Counsel and Act. of *Life Asso. of America*. Mr. Barnes was the first ins. supt. of that powerful State. He was appointed by the Governor under the powers of the Ins. Act of April 15, 1859. The Act came into operation on Jan. 1, 1860. Mr. Barnes received his appointment on the 11th of that month, and commenced the duties of his office on the 12th. He entered upon those duties with an earnest intention of faithfully discharging them. The task was one surrounded with many difficulties, but he surmounted many if not most of these. His first report is a document of considerable interest. His later reports are favourably known to nearly all ins. men on this side. Their ann. appearance was looked forward to with much interest. If they were occasionally deemed too prolix, it must at least be remembered that they grew with the growth of ins. on the American soil; that they gave us our first real knowledge of the magnitude of that growth; and made us familiar with a system of State supervision, which, however distasteful to us on principle on this side, has on the whole worked marvellously well for the U.S., and prob. has reduced the chances of failure to a minimum. Mr. Barnes was succeeded in office by one of those political vicissitudes incident to the form of government of his country; but we believe his incumbency was marked by an honest discharge of his duties, and an earnest desire for the well-being of those interests committed to his charge. If business or pleasure should at any time call him to this side, he will find his name is still a "household word" in ins. circles here.

It was during Mr. Barnes's tenure of office that the pub. of that most important work, *Valuation Tables*, based upon the American T. of mort., was commenced. [ACTUARIAL TABLES.]

Mr. Barnes pub. in 1871—(1). *A Report upon the Condition and Prospects of the Life Asso. of America, for the year 1870*; but which in fact may "be called a review of the general position of life ins. in America, England, Germany, and France," vide *Assu. Mag.* (vol. xvi., p. 358). (2). *Paper on an Uniform Standard of Mort. and Int. for State Life Valuations*. This last pamph., which is one of great interest, was prepared and submitted to a Committee of the *National Ins. Convention* held in N. Y., in Oct. 1871.

BARNEY, STEPHEN, was Superintendent of Agents for *Minerva* (No. 1) from 1854 to 1865. He was very energetic in the discharge of his duties and deservedly made many friends. He withdrew from ins. bus. at the date last named.

BARONETAGE.—In 1845 Dr. Guy submitted to the Statistical So. a paper, *On the Duration of Life among the Families of the Peerage and Baronetage of the United Kingdom*, and the

same was pub. in the *Journal* of the So. (vol. viii., p. 69). It will be more convenient to treat of the entire subject under PEERAGE.

BARRATRY (from the Italian *barratrare*, to cheat).—In navigation barratry is, in its most extensive sense, any fraudulent or unlawful act committed by the master or mariners of a ship, contrary to their duty to their owners, and to the prejudice of the latter. It may be committed by running away with a ship, wilfully carrying her out of the course prescribed by the owners, delaying or defeating the voyage, deserting convoy without leave, sinking or deserting the ship, embezzling the cargo, smuggling, or any other offence whereby the ship or cargo may be subjected to arrest, detention, loss, or forfeiture. Many foreign jurists hold that it comprehends every fault which the master and crew can commit, whether it arise from fraud, negligence, unskilfulness, or mere imprudence. In England it has been ruled that no act of the master or crew shall be deemed Barratry unless it proceed from a criminal or fraudulent motive. It is the practice in most countries to include Barratry in the risks insured against.

By 1 Anne, st. 2, c. 9, s. 4 (1702), by 4 Geo. I. c. 12, s. 3 (1717), and 11 Geo. I. c. 29, s. 5 (1724), if any owner of, or captain, master, officer, or mariner, belonging to any ship, shall wilfully *cast away, burn, or destroy* the ship, or direct or procure the same to be done, with intent to prejudice any person that shall have underwritten any policy of ins. thereon, or any merchant that shall load goods therein, or any owner of such ship; the persons offending, being thereof convicted, shall be adjudged felons, and suffer without Benefit of Clergy. If (sec. 6) any of the said offences shall be committed within the body of any country, the same shall be inquired of, determined, and adjudged, as felonies done within any country are to be; and if any of the said offences shall be committed upon the high seas, the same shall be tried and adjudged as by 28 Henry VIII. c. 15—*An Act for the punishment of pirates*.

In the case of *Vallejo and Echalar v. Wheeler*, tried in 1774, Mr. Justice Aston said: One would wonder when this word was in use *two hundred years ago*, that there should remain *now* any doubt what barratry is. I think it has always been the same in idea and general meaning, though differing in terms and not settled in practice—*dceit, villany, knavery, fraud*. In Florence it was so explained near two hundred years ago: *De barrataria et contrabanda venditione*.

BARRENNESS.—The proportion of women totally barren has been estimated at 1 in 40; to this is to be added a similar and equal barrenness of the men; so that *one-twentieth* of the women are wholly unprolific. In the next place, an allowance more considerable is to be made for partial barrenness. . . . It would be difficult to make a good estimate of this quantity; probably a deduction of one-seventh on this account will be found not far from the truth. After making these two deductions, we arrive at this result—that the proportion of the effective child-bearing women is *one-tenth* of the total pop.—*T. R. Edmonds, 1832*.

BARRETT, A., was Sec. of *Law Property* Ins. Office from its commencement down to 1854.

BARRETT, GEORGE, of Petworth, Sussex, a Farm Steward or Bailiff, born about 1752, was the discoverer or inventor (*in England*) of the *Columnar method* of arranging life tables, which Professor De Morgan has declared should be designated *Barrett's method*. The arrangement itself we shall speak of under COLUMNAR METHOD. We confine ourselves here chiefly to Barrett's claim to the invention.

It may be well at once to state that Mr. F. Hendriks claims for Professor Tetens, of Kiel, priority of discovery, and the pub. of a book thereon as early as 1785; but he does not assert or imply that Barrett ever saw or heard of this work.

Prof. De Morgan prepared for *Assu. Mag.* (vol. iv.) a most interesting account of the life and labours of Barrett, from which we condense some of the following details:—At an early age he was possessed of a great love of calculation, and spent all the money he could get on books of arithmetic, algebra, etc. It is said that when a boy he was one day met by the vicar of his parish, who was in difficulty about some matter of calculation, but was extricated by his young parishioner, who levelled the sand near him with his hand, and worked out the question on it with perfect accuracy. He could not write very well, and went to school at Godalming to learn; and soon showed that if he could not write very well, he could beat his master at calculation.

Between 1801 and 1813 he worked very hard at calculating, and produced most of his Tables. In 1811 he commenced to correspond with Mr. Francis Baily, who aided him in an effort to get his Tables pub. by subs., but the project did not succeed. The Tables he had then prepared were the following. We append some of Mr. Barrett's explanatory notes thereon: (1). Sweden expectation of Two Joint Lives for all differences of age. (2). For easily finding the expectation of One, Two, Three, or Four Joint Lives, from De Moivre's hypothesis. (3). Four p.c. *Male* Single Life Annu. T. (4). Four p.c. *Female* Single Life Annu. T. (5). Sweden Single Life Annu. T. at 2, 2½, 3, 3½, up to 10 p.c. "The last three Tables will also show the value of an annu. during any given life of £1, payable at the end of the first year, £2 at the end of the second year. . . ." (6). Four p.c. Joint Life (one *male* and one *female*) Annu. T. for all ages; also showing the increasing annu. (7). Sweden Joint Life Annu. T. for all ages 3, 4, 5, and 6 p.c. (8). One, Two, Three, and Four Joint Lives from De Moivre's hypothesis, at 2, 2½, and 3, up to 10 p.c. "The

Four Joint Lives might have been excluded as useless, but are retained to exemplify more fully the method of calculation. By this Table I can find the value of an annu. on the joint lives in a few minutes, either for terms, or the whole duration of the lives." (9). Four p.c. [Swedish] Table on Three Joint Lives. "This Table will be comprised in 672 pages quarto. . . . Mr. Morgan has expressed an opinion that a work to that extent would never be accomplished from a Table of real observation." N.B.—"All the above Tables show the value of the annu., whether they be temporary, deferred, or for the whole duration of the lives, and at any difference of age ; and therefore you well know that the labour of constructing them must have been immense."

The explanations incorporated above occur in his correspondence with Mr. Baily. It will be seen that Mr. Baily enumerated 18 different Tables in his paper ; but they are all comprehended in the arrangement given by Prof. De Morgan as above, under nine heads.

In a letter to Baily, under date 28th April, 1811, Mr. Barrett first announces the method he had employed :

I must now beg leave to inform you that my Tables are constructed in a way different from any I have before seen ; had that not been the case, I verily believe the public would always have been in want of a table of three joint lives for all ages, and therefore this must be my apology for adopting a method different from all others ; and I hope it will prove to you satisfactory. If any will object to it let them try their skill, or rather their patience, in producing tables equally comprehensive, that may be found more consonant to their wishes. I shall certainly have no objection. I am fearful I was a little unguarded in my expressions when I said "Tables showing, etc.," when it would have been more appropriate to have said "Tables for finding or determining, etc." For the value of an annuity *deferred*, or for the *whole of the same life*, is expressed in my tables by vulgar fractions, each having the same denominator, and therefore a division is requisite to reduce them to a decimal form ; they therefore cannot be strictly said to *show* those values by inspection, *decimally* ; but they show the values of the annu., whether for the whole of life or when deferred, by a *vulgar fraction* ; and consequently to find the value of a temporary annu., one subtraction and a division will be necessary ; and as to *increasing* annu., the values thereof, whether temporary, deferred, or for the whole duration of lives, will be determined in like manner.

Mr. Baily brought Barrett's method before the Royal Society, but unfortunately the Committee of that learned body did not perceive merit enough in the method to find a place for the paper in its *Trans.* It was one of those unfortunate instances which (as Prof. De Morgan remarks) create a fear lest there should be other communications, as valuable, which have been also rejected, but have never found such a champion as Baily.

In 1813 Mr. Baily, as we have already stated, made known Barrett's method in an appendix to his own work on *Annu.* ; which appendix contained the substance of the paper that had been read before the Royal So., or rather was in the main the same paper. It was now prefaced by some very pointed remarks on the refusal of the Council of the Royal So. to print the paper in its *Trans.* ; and on the life offices who would not subscribe to the pub. of the Tables.

Mr. Baily thus speaks of Mr. Barrett and his labours :

He has calculated and formed the most numerous and comprehensive set of life annu. T. that ever were, or probably ever *will* be produced. . . . Thus the world has been deprived of one of the most extraordinary and successful efforts of patience, perseverance, and talent, that was ever produced by one man. . . . Nevertheless, as far as my humble efforts can avail, the astonishing labours of Mr. Barrett shall not sink into oblivion. . . . Amidst a variety of avocations Mr. Barrett has never lost sight of his favourite object. At an early period of his life he became attached to this branch of analysis ; and without the aid of a master he made considerable progress in the mathematics, with a view to his further and more complete study of the subject. He very soon saw how much the application of the science was abridged, through the want of a more numerous and extensive set of annu. tables than those we at present possess. After 25 years' close application he has calculated the most complete set of tables relative to this subject that probably will ever be again produced by any one person. The tables are eighteen in number.

In 1813 Barrett was appointed Act. of the *Hope* Life Office ; but by the end of 1815 was relieved of that appointment. Prof. De Morgan furnishes prob. the true reason for the brevity of the engagement : "Barrett was by nature a *calculator*, and subject to the absence of mind which often accompanies *numerical* thought. He scarcely took a meal without marking figures with his fingers on the table. He was known occasionally to forget to sign his name to his own letters, and the circumstance in the neighbourhood was considered a sufficient identification of the writer."

After this he retired to his sister's house at Godalming, and resumed his favourite labours. He felt deeply the failure of the attempt to pub. his Tables. Altogether he laboured for 25 years at their completion. He died in 1821, after months of extreme suffering ; indeed for a great part of his life he had been afflicted with gout and other disorders. [COLUMNAR METHOD.]

BARRETT, SAMUEL, was orig. Sec. of *Argus*, 1833.

BARROW IN FURNESS SHIP INS. CO.—A Mut. Marine Ins. Asso. under this title was founded in 1857.

BARTER.—To exchange one commodity for another ; or truck wares for wares. It is derived from the Spanish, to overreach or circumvent. It is provided by the Ins. Ordin. of *France*, that if the (*marine*) ins. be made upon returns from a country where trade is carried on by barter, the valuation of the goods in return shall be made on the cost of those given in barter, adding thereto all charges.—*The Guidon*.

BARTLETT, REV. J., played at one time a conspicuous part in connexion with various

ins. offices. Thus between 1848 and 1856 we find him chairman or director of the following: *Athenæum L.*, *Athenæum F.*, *Caxton*, *London Exchange*, *Security Mutual*, *Phoenix L.* In the latter case, his brother directors called upon him to resign, in consequence of his connexion with so many offices.

BARTON, DR.—See *Barbon, Dr.*; also FIRE INS., HIST. OF.

BARTON, E. H., pub. in New Orleans in 1851 *Report on Vital Statistics and Hygiene of the State of Louisiana, with an Appendix on Life Ins.* [LIFE INS.] [MORT. OBS.]

BARTON, WILLIAM, read before the American Philosophical So. in 1791: *Observations on the Probabilities of the duration of Human Life, and the Progress of the Pop. in the United States of America*: and the same was published in the *Trans.* of that So. in 1793. [MORT. OBS.] [POPULATION.]

BARYCENTRIC CALCULUS.—An application to geometry of the mechanical theory of the centre of gravity.

BASILICA.—The name given to a Digest of Laws, in sixty books, commenced by the Byzantine Emperor, Basilius, called the Macedonian, A.D. 867, and finished and promulgated towards the end of the 9th century by his son Leo, surnamed the Philosopher. By some it is asserted that it was afterwards revised by Constantine Porphyrogenitus, the son of Leo; but this is regarded as doubtful. This Digest contained a number of regulations affecting maritime commerce; but Book LIII. was specially allotted to this subject. The original text of this particular chap. cannot now be found; but, thanks to the learned researches of Pardessus, its contents are pretty well known. We have already mentioned the somewhat special provision regarding average contribution. [AVERAGE MARITIME.] In most other respects this compilation followed the Digest and Code of Justinian, and therefore need not be further dwelt upon here. [BOTTOMRY.] [SALVAGE.]

BASIS OF THE CONTRACT.—The proposal (in U.S. *application*) for ins. is made in every country, and in every branch of ins. bus., except marine,—the “basis of the contract.”—See CONDITIONS OF INS.

BASTARD.—A child not born in lawful wedlock. An attempt made in England, in 1236, to legitimate bastard children by the subsequent marriage of the parents failed, and led to the answer to the barons assembled in the Parl. of Merton, *Nolumus leges Angliæ mutari*, “We will not have the laws of England changed.”—*Vincent*. [BIRTHS.] [ILLEGITIMATE BIRTHS.]

BASTINE, L. & E. VANHOOREBEK, pub. 1847: *Observations sur le système des Assurances par l'état*.

BATEMAN, DR.—In September, 1804, he commenced a series of obs. and reports on the *Diseases of Lond.*, which he continued till the end of Aug. 1816. The subjects of these reports were the cases that occurred at the Public Dispensary in Lond., in which he was a physician. They were first pub. quarterly in the *Edin. Medical and Physical Journ.*; but the author collected them into a separate vol., which he pub. in 1819, with an introduction containing an *Historical Survey of the Diseases of Lond.* [DISEASES.] [LONDON.]

BATEMAN, THOMAS B., Fire Manager of *London Assurance* since 1858. He entered that office as a junior in 1837, and passed through the various stages until he reached the head of his department.

BATES, E.—Resident Director of the *Argus* for many years, down to 1862. -

BATH (OLD) FIRE INS. Co.—This office was founded in Bath during the last century, and estab. a fund of £30,000, “to make good all losses to persons insured by them.” In 1805 it stood No. 7 on the list of duty paid by country offices, its amount being £1599 9s. 5d. It carried on bus. until 1827, when its connexions were trans. to *Sun*.

BATH SUN FIRE INS OFFICE, founded in Bath towards the close of the last century. It also had a fund of £30,000 for the purpose of meeting losses. In 1805 it stood No. 12 on the list of duty paid by country offices. In 1838 its bus. was trans. to the *Sun*. It was stated that one of these Bath offices lost £18,000 before it relinquished bus.

BATHS AND WASH-HOUSES.—In districts to which the Public Health and Local Government Acts are applied, the Local Board of Health may supply water from any works belonging to them to any Public Baths or Wash-houses (11 & 12 Vict. c. 63, s. 77). By the Wash-houses Acts (9 & 10 Vict. c. 74, and 10 & 11 Vict. c. 61), it is provided that the Council of any Borough, or Commissioners appointed with the approval of the Sec. of State in any parish, upon resolution of two-thirds of the ratepayers voting at a vestry specially called for the purpose, may erect or convert any buildings into Public Baths and Wash-houses, etc. etc. In the *Assn. Mag.* (vol. vii., 1856), reference is made to the want of Public Baths in London.

BATTA.—Deficiency, discount, allowance to troops in the field. A term used in India.

BATTENED DOWN.—When the hatchways of a ship are in very bad weather covered with strong gratings, and these with painted canvas nailed under long pieces of wood (battens) to keep the water from getting below the decks.

BATTERSON, JAMES G., the enterprising President of the *Travellers* and the *Railway Passengers*, of Hartford, Conn., and in a word the founder of the bus. of Accident ins. in the U.S. Mr. Batterson lives pleasantly in the memory of those who made his acquaintance on this side.

BATTLE, DEATHS IN.—These rank as Order 2 in the Class of VIOLENT DEATHS. Under

head of WAR we shall present some interesting statistics, compiled by Mr. Hodge, Mr. Farren, and others. In the *Assu. Mag.* for 1856-57 will be found some valuable papers on this subject, from the pen of Mr. Hodge.

BATTLE, WAGER OF.—A species of judicial murder, being a trial by combat formerly allowed by our English laws, under the name of *Appeal*, or *Assise of Battle*, or *Writ of Right*, where the defendant in an appeal of murder might fight with the appellant, and make proof thereby of his guilt or innocence. The last instance of resort to such an appeal was as recently as 1818, when a young maid, Mary Ashford, was believed to have been violated and murdered by Abraham Thornton, who in an appeal claimed his right by his Wager of Battle, which the Court allowed; but the appellant, the brother of the maid, refused the challenge, and the accused escaped. The law was immediately afterwards repealed by 59 Geo. III. c. 46 (1819). The deaths from this cause can only have been nominal.

BAUMANN, CHRISTIAN JACOB.—He edited in 1775 the 4th ed. of Sussmilch's famous work *On the Divine Decree in the Variations in the Human Race, with regard to Births, Deaths, etc.*; and in 1776 he added a 3rd vol., consisting of additions to the other two, and remarks upon them, with many new tables, and a copious index. [MORT. OBS.]

BAUMHAUER, M. M. VON, Director of the Statistical Department in the Netherlands. A paper by this gentleman, *On the Method of Constructing Tables of Mort.*, appeared in the programme of the 7th Session of the International Statistical Congress held at the Hague, in Sept., 1869. A trans. of this paper, by Mr. J. Hill Williams, appears in the *Assu. Mag.* xvi. p. 34.

BAVARIA.—A kingdom in South Germany. Pop. (1860), 4,689,837—density p. square mile, 158. In the 6th Rep. of Reg.-Gen. (1845), there are some interesting statistics regarding its births, marriages, and deaths. In 1840 the pop. was 4,308,751. Number of Families, 957,268. Number of Males under 14, 607,585; above, 1,465,652. Females under 14, 622,565; above, 1,612,949. Total: Males, 2,073,237; Females, 2,235,514. In the *Assu. Mag.*, 1851 (vol. i. p. 348), will be found a very interesting account of the operations of the *Cattle Ins. Co.* of the Pfalz. [CATTLE INS.] Fire ins. of buildings is carried on by the State, but not for profit. The prem. a few years since averaged 3s. 9d. p. £100.

BAWTREE, GEORGE, was Sec. of *Essex and Suffolk Equitable* from 1852 to 1868.

BAY.—An arm of the sea more or less surrounded by land except at the entrance.

BAY, R., Underwriter in Lond. of *Azienda Assicuratrice* in 1868.

BAYES, REV. THOMAS.—There was pub. in the *Phil. Trans.* for 1763, *An Essay towards Solving a Problem in the Doctrine of Chances*, from the pen of this gentleman, of whom Prof. De Morgan has spoken in terms of eulogy.

In 1764 the same paper re-appeared in the same pub., with some add. by Dr. Price.

BAYLEY, Mr., Newington Causeway, perfected in 1872 an improved fire-escape, which in future is to be employed in the metropolis. [FIRE-ESCAPES.]

BAYLEY, JOHN DIGGLES, was Act. of the *Royal Exchange* from 1820 to 1838. It will be seen from the prosp. of the Corp. that at this date the head of the life department was called "Life Accountant," but it involved the duties of Act. The modern designation of Act. is now used even by this venerable Corp. Mr. Bayley gave evidence before the Select Parl. Committee on F. Sos. in 1827.

BAYLIS, EDWARD, THE LATE, was one of the most remarkable of the many remarkable men who have figured in ins. history. He was essentially a promoter or founder of ins. offices, and he was something more—he was an enthusiast in the cause of life ins. We shall briefly trace his ins. biography. He was orig. a clerk in the *Alliance F. and L.* In 1838 he promoted the *Victoria Life* (No. 1), and became its Act. In 1839 he aided in founding the *English and Scottish Law*, and became its Act. In each of these offices he made the practice of granting loans in connexion with life ins. a feature. About 1842 he founded the *Anchor Life*, and became its Act. and Man. In 1843 he founded the *Candidate*, and in 1847 the *Professional*, with which latter office his name is more particularly known, and he became its Act. and Sec. In 1851 he aided in founding the *Trafalgar*, of which his son became the Man., and he the Act. In the following year he aided in founding the *Waterloo Life, Education, Casualty, and Self-Relief Assu. Co.*, of which his son-in-law became the Man. These were no sooner well off his hands, than we find him aiding in the promotion of the *Unity Fire* (1853). Lastly, in 1854, he promoted the *British Nation*, of which he became the Man. and Act.

In all his later schemes there was a curious mixing up of philanthropy with business, as will be seen in their individual histories as we come to them. He saw in life ins. a great power for good; and he desired to tax its capabilities far beyond their power or even possible limits; hence at least one cause of the misfortunes which befell his various projects—of these the only one now remaining is the *English and Scottish Law*, from the management of which he was severed at a very early date.

In 1844 Mr. Baylis pub., *The Arithmetic of Annu. and Life Assu., or Compound Int. Simplified; Explaining the Value of Annu. Certain or Contingent on One or Two Lives, and the Value of Assu. in Single and Ann. Payments, and Comprehending the Value of Leases, Pensions, Freeholds, and Rev. Sums in Possession or Expectation, Immediate,*

Deferred, or Temporary, Illustrated with Practical and Familiar Examples. This work is chiefly arithmetical, and teaches much more by example than by precept. Indeed it may be said to be completely overrun with examples, some with and a great many more without solutions. The work is now scarce. In it was contained a proposal for the abolition of poor-rates by means of life annu. [POOR LAWS AND LIFE INS.]

In 1852 Mr. Baylis pub., *Reply of Professional [Life Office] to Attacks*, etc.

The editor of the *Post-Mag.*, who had often been in conflict with Mr. Baylis and members of his family, said of this gentleman in 1852 :—"I believe him to be an amiable generous-hearted man, rich in intelligence, of inexhaustible energy, indomitable in resolution, but a mistaken enthusiast on the question of life ins." We believe this to be a very just estimate of his character.

It would be unjust to a previous promoter to give Mr. Baylis the credit of being the sole projector of schemes for combining charitable objects with the practice of life ins. Mr. Charles Povey preceded Mr. Baylis by at least a century, and he may fairly claim to have been the originator of the system. In proof see account of his project under title of *Proprietors of the Traders Exchange House*. [POVEY, CHARLES.]

About the year 1859, being then stricken in years, and suffering under the repeated disappointment occasioned by the failure of his projects, he left England, and settled down at the Cape of Good Hope, where we believe he again made efforts in the old direction, but without success. He died in 1861, aged about 70.

BAYLIS, THOMAS HUTCHINSON, son of the preceding, possessing a similar amount of enterprise in the founding of ins. asso., but minus the philanthropy. We find him first (about 1842) a clerk in the *Anchor* (No. 1). In 1850 he had become Manager of the *Trafalgar* Life. While in that position he aided in the formation of the *Unity* Fire, of which he became the General Man. (1852). In 1854 he founded the *Unity General* Life, of which he became Managing Director, this company absorbing the business of the *Trafalgar*. A little later, and the *Unity Bank* was also founded by the same promoter.

Pausing here for a moment, we may remark that the building up of these *Unity* inst. is to be regarded as the great event in the life of Mr. T. H. Baylis. He therein exhibited a large amount of enterprise, energy, and tact; yet the seeds of their dissolution were sown almost before their full development was realized. These circumstances will be made more clear when we trace the individual histories of the offices named.

By July, 1856, Mr. Baylis found himself in a serious controversy with his co-directors of the *Unity General*, which led to his resignation. August was spent in pamphleteering. On 11th Sept. a meeting of shareholders was held. It was resolved thereat that Mr. Baylis be appointed Man. *pro tem*. On the 3rd Oct. the board passed a series of resolutions regarding Mr. Baylis's position, "which they considered absolutely necessary for the proper conduct of the asso." (*inter alia*) :

3. That he should in future never incur on behalf of the asso. any large expenditure without the direct sanction of the board. 4. That he should be required to give an undertaking to the board that he will not directly or indirectly mix himself up with, or promote any new cos. or schemes, but sedulously address himself to the re-organization and further development of this asso. 5. That his salary be £600 p.a., with a commission at the rate of 3 p.c. on new ann. prems., less 7½ p.c. paid as commission to agents.

On the 7th Oct. Mr. Baylis accepted the above terms in writing. On the 10th he advertised that he had done so; but on the 21st of same month a general meeting of the shareholders took place, and thereat it was resolved that "Mr. Thomas H. Baylis, the late Managing Director, be no longer an officer of this asso."

Regarding the *Unity* F., on the 23rd Sept., 1856, an extraordinary general meeting of the shareholders was held at the London Tavern, and after great complaints of the extravagance of the management, a committee of investigation was appointed. The next we hear of Mr. Baylis is under date "Southampton, 14th Jan., 1857," stating that he had that day sailed from that port for Australia. On the 27th July, same year, Mr. Baylis returned to this country, "by the overland route." Before the end of the year it was announced that he had commenced an action against the directors of the *Unity* Fire, for *libel*. We believe this action never came to a hearing.

In this same eventful year (1857) Mr. Baylis founded the *British, Foreign, and Colonial*, Ins. Asso., and became its Managing Director. He instituted for this co. in the first instance a scheme of "Life Assu. Classes," which was in fact a scheme for obtaining paid-up pol. by way of lottery. The law officers of the Crown prevented the carrying out of this part of the project. He next took up a project which Dr. Farr had several years before (1853) propounded as a scheme of National Ins. Finance, and grafted it upon his new co. under the title of "Consols Life Pol." We shall explain this scheme more in detail under CONSOLS INS. Before the close of 1858 a petition was before the Court of Chancery for winding up the *British, Foreign, and Colonial*; and although this petition was dismissed, its affairs seemed hopelessly involved.

The next step was the regis., towards the close of 1858, of *Consols* Life Assu. Asso. The eventful hist. of that co. will be given under its alphabetical title. In 1862 it passed into liquidation.

In 1867 Mr. Baylis propounded a scheme of "Compound Life Pol."—a scheme which

not only possessed originality, but some features of real sound practical merit. It seems to have fallen through—at least, it has never been put into practical operation.

In 1868 Mr. Baylis matured the scheme now being worked by the *British Imperial Life Office*. We believe he has never taken any part in the management of this co. He simply receives a royalty for the use of his invention, which is a modification of the Consols project.

In 1869 Mr. Baylis matured his newest system, known as the "Positive Life Assu." In the same year he granted a licence to the *Masonic and General Assu. Co.*, to work his new plan; but some legal difficulties apparently intervened, and a prov. agreement was entered into for founding a new co., of which the bus. of the last-named co. was to form the basis. That agreement has not been carried out.

On the 27th Jan., 1870, Mr. Baylis regis. the *Positive Government Security Life Assu. Co., Lim.*, of which we shall give a detailed account hereafter. Its essential plan is the issue, in respect of each prem. paid, of a document called a "Positive Note" for a certain sum secured by the payment of such prem., "payable to bearer 3 months after the death of the assured." A cap. has been raised; a highly respectable Board of Directors formed; offices taken in Bedford-square; and Mr. Baylis is once more trying his hand at ins. management.

Mr. Baylis's connexion with the management of the *Review Ins. Journal*, is understood to have ceased.

BAYNES, W. WILBERFORCE, Sec. of *Star* since May, 1871. Mr. Baynes has not had the advantage of being trained to ins. bus., but his experience in public enterprise, and especially in finance, may be regarded as an ample set-off. That it was so regarded by a body of competent men is clear from the fact of his being selected from among a large number of well-qualified candidates.

BEACH.—A sea-beach is that expanse of gravel, rolled shingle, shells, coral, and sand, or whatever corresponds to such things, exposed on the sea-coast to tidal action. A vessel is said to be "beached," when from accident, or by design, she is stranded on this space.

BEACON.—A lighthouse or sea-mark, used for the guidance of ships at sea by night as well as by day. The Trinity House is empowered to set up any beacons or sea-marks wherever they shall be deemed necessary.

BEACON FIRE INS. CO., founded in Lond. in 1821, with an authorized cap. of £200,000, in 2000 shares of £100, to be paid up in full by instalments. This Co. was founded under the immediate auspices of Mr. John Clark, the Managing Director of the *European* (No. 1); and he also became Managing Director of this Co. The orig. prosp. states that the plan of this Co., besides the advantages offered by other cos., embraced:

A reduction of 25 p.c. on the rate of prem. required to insure private dwellings and household furniture not deemed hazardous, besides a reduction of 5 p.c. on the duty payable to the Government; and an equally liberal abatement will be made on all other descriptions of insurance.

The payment of 5 p.c. on the amount of loss on all property insured with this Co., within one week after the same shall have been destroyed or damaged by fire; and the remainder so soon as the amount of loss can be ascertained.

The ins. of rent during the re-building of the premises.

The ins. of a weekly allowance to tradesmen and others during the period they are deprived by fire of the means of pursuing their usual vocations.

The ins. of property for specific periods, or during the continuance of any life or lives.

And to secure proprietors of houses from sustaining loss by the tenants having on the premises *property deemed hazardous*—this Co. further undertakes, by the payment of a composition rate of prem., to insure landlords of such property against every risk that might otherwise be incurred from the misconduct of their tenants.

The Co. carried on bus. down to 1827, when it stopped—involving the proprietors, it has been stated, in losses exceeding £40,000. Its unexpired risks were handed over to the *Protector F.*

Sir Peter Laurie gave to the Parl. Committee which sat to inquire into Joint-Stock Cos., 1841 [did not report until 1844], the following instructive details regarding his connexion with this Co.:

There were twelve directors (giving the names of several highly respectable persons as being of the number). They said they wanted more cap., and 12 more directors. I was simple enough to become one, and pay down my £500, and the new directors paid down £500 each, that was £6000; that set the Co. upon its legs; that was in the year 1824. We met regularly, but Mr. — was the manager, and the whole business was in fact done by him. At last, after we had gone on as we supposed flourishingly, I imagined that it was all wrong; and Mr. — and myself and two more looked into the accounts; we had left it to the manager, who made a flourishing account every year, and it appeared that the prosperity was beyond anything. I myself induced a great many persons to take shares; but on making this examination, we found that we had not sixpence, and we gave the *Protector F.*, office every shilling we had in our coffers to release us from our responsibility; and gave Mr. — £2000 to go away; that wound up the concern.

BEACON LIFE AND FIRE ASSU. CO., founded in Lond. in 1853, with an authorized cap. of £150,000, in 15,000 shares of £10. The promoter was Mr. James Sydney Crocker, who became Man. and Sec. The prosp. of the asso. pointed out "the risk which is incurred in purely mut. offices until a sufficient fund is realized to meet the expenses of management, and those casualties to which they are necessarily subject." In this case, although the asso. "is formed on the mut. principle," (!) this was combined with "the

security of a guarantee cap." In the life department "deposit ins., or fluctuating pol. kept up by variable payments," were granted. In the fire department "persons assu. for the period of 7 years parti. in profits, and are at once allowed a discount of 1 year's prem. and duty." Four-fifths of profits to parti. members. The remaining 20 p.c. "forms a fund to redeem the paid-up cap., and to pay a bonus upon the same of not less than 100 p.c." In 1856 its life bus. was trans. to *Albert*; its fire bus. to *Times*.

BEACONAGE.—Money paid towards the maintenance of beacons.

BEADNELL, JOHN, Managing Director of the *Protector* (1853), from the date of its formation down to his death in 1865. He was also a Director of the *Gresham*, and of the *Accidental Death* (No. 2).

BEAL, EDWARD BLAKE, for many years Sec. of *Law Fire*. He retired in Sept., 1868.

BEALE, WILLIAM, Goldsmith, London, obtained an exclusive patent from King James I., in 1625, for 14 years, "for the sole making and practice of certain compound stuffs, and waters extracted out of certain minerals, etc., of this our realm, called by the name of cement, or dressing for ships, to prevent them from burning in fights at sea; and also from the sea-worm or bernicle." For which grant the proprietor was to pay 40s. p.a. into the Exchequer.

BEAMAN, WILLIAM C. H., Assistant Sec. of *Briton* since 1863; and of the *Britannia* Fire from its commencement. He entered the *New Equitable* in 1850 as a junior, and passed over with the bus. of that Co. to the *Briton*. Mr. Beaman is always spoken of in terms of eulogy by the numerous agents of his cos.

BEAMINSTER, Dorset.—This town was destroyed by fire in 1644. In two hours 144 houses were burned, and many barns and stables. In 1684 it was burnt down again, and in 1781 a fire destroyed more than one-third of the town.

BEARER, LIFE POL. PAYABLE TO.—In many parts of the Continent of Europe L. pol. are made payable to bearer; just as marine pol., share warrants, and other securities, are so made payable. In this country marine pol. pass from hand to hand very frequently with a simple signature by way of indorsement; while under the assignment of L. Pol. Act, 1867, a very short indorsement is alone necessary. But in each of these cases *proof of interest* must be supplied, if required, in order to constitute a valid claim. There is, however, in our case the question of stamp duty on the instrument of assignment—a serious difficulty. It will be more convenient to discuss the entire question under head of NOMINATION POL.

BEATTIE, ALEXANDER, was Sec. of *Railway Passengers* from its commencement down to 1851, when he resigned, and became Sec. of *National Life*, which position he occupied down to 1855.

BEAUMONT, GEORGE D. B., Barrister-at-Law, pub. in 1843, *The Law of Fire and Life Assu.*; and in 1846, 2nd ed. of same work, under an extended title, viz., *Law of Fire and Life Ins., with the Latest Decisions, and an Appendix containing T. for Three Lives, T. for Benefit Clubs, and other Practical Rules and T.* The first ed. only bore one Christian name—"George"—but both ed. were by George D. B. Beaumont. We have quoted from this work.

BEAUMONT, HENRY, was Sec. of *Provident* for some years prior to 1849. In 1851 he became Act. and Sec. of *New Equitable*. In 1852 he promoted the *Life Asso. of England*. He died in America.

BEAUMONT, JOHN AUGUSTUS, F.G.S., Man.-Director of the *County F.*, and *Provident* L. offices since 1841. He entered these offices in 1824, and devoted himself to assisting his able and energetic father in the conduct of the growing bus. of these inst. In 1826 he became Sec. of the Cos., occupying that position until he succeeded to his present higher one. In 1842 Mr. Beaumont pub. *Hints upon Life Ins.* His pen has been otherwise almost entirely devoted to the advocacy of the interests of his own Cos—rubbing sometimes a little hard against others in the process—of which he is a bold and jealous champion.

BEAUMONT, JOHN THOMAS BARBER, more generally known as "Barber Beaumont," was the founder of the *County Fire* and *Provident* Life Offices, with which he continued connected down to his death in 1841. He was a remarkable man in many respects. He devoted his youth to historic painting, and secured medals therefor from the Royal Academy, and from the Society of Arts. At the time of the threatened Bonaparte invasion he raised a rifle corps in defence of England, and urged that the people should be armed as sharp-shooters. To show what could be done with practice, he held a target on one occasion in Hyde Park while his entire corps fired at it from a distance of 150 yards. In connexion with the above offices he founded a *Provident asso.* for the benefit of working men. He did much to help forward properly constituted friendly societies and savings banks. He fearlessly attacked the *Independent and West Middlesex* scheme at a time when it appeared to be flourishing and powerful; and he bore the cost of an action commenced against him by the concoctors of that swindle. Regarding his own companies he warned the proprietors not to be too much elated with their first success. By such careful means he built up the shares of those companies to the values they afterwards assumed.

In 1806 he founded the "Provident Inst. or Bank of Savings," in Covent Garden;

an asso. the first of the class, and one which has been productive of much good. He wrote an essay explaining the working of the inst., also *An Essay on Provident Banks*.

In 1810 he delivered an address to a general court of the *Provident*, from which we shall have occasion to quote in our hist. of that Co. The address was both earnest and practical.

Mr. Beaumont was, we believe, the author of a pamph. pub. in 1814, *Life Ins. : Important Facts, showing the successive Reductions that have taken place in the Terms for the Ins. of Lives, and the prob. of ultimate failure in some recent schemes, recommended to the serious consideration of persons interested in the permanent stability of such establishments*. By Philanthropos. [LIFE INS., HIST. OF.]

Soon after this Mr. Beaumont designed the present offices of the Cos. The design was carried into effect by Mr. Abraham.

A remarkable circumstance in connexion with Mr. Beaumont's hist.—and one which nearly cost him his life—is this : He had felt it his duty as the Man.-Director of the *County F.* to resist a claim made upon that Co. by Mr. Thomas Thurtell in 1824, of which we shall give an account under the hist. of that Co. It is enough to say here, that though defeated in two actions, the Co.—or really, as the parties themselves well knew, Mr. Beaumont—ultimately caused Mr. Thurtell and some of his associates to be committed to Newgate. This Mr. Thomas Thurtell had a brother, Mr. John Thurtell, who was afterwards hanged for the murder of Mr. Weare. This person took up what appeared to be his brother's quarrel with Mr. Beaumont—but which was really his own, for he was mainly interested in the ins.—and went to work to avenge it in his own manner. He obtained an air-gun,—the gun is still carefully preserved at the *County F.* office ; he frequented a house at the back of the office, where Mr. Beaumont then resided. Spies were employed to watch. On Mr. Beaumont's leaving the offices by the back door one evening, Thurtell was immediately informed, and posted himself in a position to await Mr. Beaumont's return. Mr. Beaumont did not return at the time, or in the manner anticipated, and the plot failed. The facts were subsequently confessed by Thurtell himself, and also by Mr. Hunt, an accomplice in the murder of Weare.

About the year 1825 another remarkable circumstance occurred, in which Mr. Beaumont was destined to take a prominent part. A disagreement between the then Chairman of the Commission of Revenue Inquiry (Mr., afterwards Lord, Wallace) and the then Chairman of the Board of Stamps (Mr. Sedgwick), gave rise to a charge against the *County F.* office of defrauding the Inland Revenue of a portion of the fire duties collected by it. We need not say more here than that a more wicked and unfounded conspiracy was never concocted and persevered in, and especially by persons in high places. The directors of the *County F.* tried every available means of obtaining a legal foothold to prove the unjustness of the charge ; but they were defeated by pleas of "privilege," and other disreputable acts. Mr. Beaumont, smarting under the unjustness of the charge and all its surrounding proceedings, addressed a letter to Lord Wallace, dated 31st May, 1827, in which occurred the following passages :

A public functionary of 14 years myself, I can readily make allowance for another who, from mere error of judgment or defect of temper, is betrayed into an occasional act of harshness, or injustice ; but the means which you, in confederacy with Mr. Sykes, have used to raise a charge of fraud on the revenue against myself and others, and your perseverance in that charge for a period of two years, in despite of the proofs of its utter falsehood which have stared you in the face, so far exceed all the usual bounds of official injustice, that I can find no excuse or palliation for your conduct. . . .

It is needless for me to describe to you your acts in further detail ; for if you are constituted like other men, you will never be able to shake them from your mind. I will not be so severe on your understanding as to suppose that you believed a word of the imputations which you pub. I will not dispute that in what you did, you bore no ill-will to the *County F.* office, nor to me ; neither I nor any one can doubt your object, who has attended to your performances. Indeed your report discloses it, when you say, that if a fraud were committed, and the Chairman of Stamps (Mr. Sedgwick) connived at it, "that would have made a case in which there would have been no choice how Gov. must have acted ;" and then proceed with the delusiveness of a Jesuit, and the artifice of a special pleader, to show that such fraud and connivance existed. But can you suppose that I and my colleagues will sit tamely down with the insults and injuries you have heaped on us, although only done to enable you to wreak your vengeance on Mr. Sedgwick ?

The language was not one word too strong under the circumstances. What did the noble lord to whom it was addressed do ? He instituted proceedings—"The King v. Barber Beaumont, Esq.," for sending the letter "with a view to incite him to a breach of the peace"! Miserable pretext ! The upshot of it all was that Mr. Beaumont was fined £500—which of course the Co. paid—and it is to be hoped properly thanked its Man.-Director for the way he had stood up for its honour, regardless of personal consequences. [COUNTY FIRE.]

In 1827 Mr. Beaumont delivered another address to the members of the *Provident L.*, at the "3rd septennial meeting." This we shall also quote in our hist. of that Co. It contained some facts of very considerable interest.

Mr. Beaumont died in 1841, aged 67.

BEAUVISAGE, M. ERNEST, pub. in Paris, in 1867, *Des Tables de Mortalité, et de leur application aux assurances sur la vie (rentes viagères et capitaux payables au décès) ; avec une nouvelle table de mortalité dressée d'après les décès constatés dans la Tontine Lafarge, et la traduction des lois anglaises de 1853 et de 1864 sur les assurances et les rentes viagères de*

P'Etat. This work contains several French and English tables of mort., including among the latter Dr. Farr's *English Table* (No. 3).

BEAWES, WYNDHAM, Merchant, Consul to His Britannic Majesty at Seville and St. Lucar. He pub in 1750, *Lex Mercatoria Rediviva; or, The Merchant's Directory; being a Complete Guide to all Men of Business, whether as Traders, Remitters, Owners, Freighters, Captains, Insurers, Brokers, Factors, Supercargoes, or Agents.* 2nd ed., 1761, with an altered title. 3rd ed., with large additions, 1771. 4th ed. and 5th ed., considerably enlarged and improved, by Thomas Mortimer, Esq., 1792. 6th ed., 1813, by J. Chitty, Esq., 2 vols. "Executed in a careless and slovenly manner."—*McCulloch*.

The orig. work was regarded as of such importance that it was pub. under the authority of a royal letter of licence, of which the following is an extract :

George the II. by the Grace of God, King of Great Britain, etc., etc. To all to whom these presents shall come, Greeting: Whereas our trusty and well-beloved Wyndham Beawes, of our City of London, Merchant, hath by his Petition humbly presented unto us, That he has, with great labour, application, and expense, compiled a body of trade under the title of *Lex Mercatoria Rediviva; or, The Merchant's Directory*, which contains every particular relative to the Commerce, not only of these Kingdoms, but of all the known world, and does also explain in a more full and ample manner, than hath hitherto been done, the Statute of exchanges, insurances, bankruptcies, bills, obligations, and every other circumstance proper for a merchant's knowledge, by which he may be fully guided in all his transactions in every branch of trade; and that though it be more particularly adapted for the instruction and government of men in their commercial engagements, yet its utility is not confined to these only, but may occasionally be of use and service to all other our subjects; as the lawyer will be advised therein of what disputes have occurred in the different parts of trade, and how the same have been decided in our Courts of Justice; and the senator and gentleman informed of the many advantages which trade brings to the nation: That the whole will be comprized in one vol. in folio, and the petitioner hopes may prove the most useful book of its kind hitherto pub.; being the products of a 30 years' experience in mercantile affairs by him (the petitioner), and of his collection of materials during the term, from the best writers in most languages; and that, as such a work is greatly wanted by the publick, and consequently may be of general use and advantage, the petitioner hath, in regard to the premisses, most humbly prayed, That we will be graciously pleased to grant him our Royal License and Privilege for the sole printing, publishing, and vending the said book, for the term of 14 years, agreeably to the Statute in that behalf made and provided. We being willing to give all due encouragement to works of this nature, which may be of publick use and benefit, are pleased to condescend to his request, etc., etc., etc.

Given at our Court at St. James's the 8th day of March, 1750-51, in the 24th year of our Reign. By His Majesty's Command (signed), Holles, Newcastle.

The author modestly said in his preface, "I wish my performance may be looked on like the bee's industry; as honey will not lose its taste, or virtue, by recollecting that that insect was only a collector, not author of its sweetness." The work has been frequently consulted by us in the progress of these pages.

BECHER, REV. JOHN THOMAS, of Southwell, Notts.—This gentleman took a great deal of interest in friendly sos. at the commencement of the present century, and was well versed in all matters appertaining to mort. tables. He gave evidence before the Select Committee on Friendly Sos. in 1825, and again in 1827.

BECK, CECIL, Manager of *Practicable* Ins. Co. during its very brief career.

BECK, RICHARD L., pub. in 1854, in pamp. form, *Practical Hints on Life Assu.*

BECKER, LEWIS, was for some years Chief Officer of "Hodge's Lambeth Fire Brigade." He afterwards became Fire Superintendent of *Western* Fire Office. Subsequently he is understood to have taken part in the formation of the *Progress, Commercial Indemnity*, and the *Monarch* (No. 3). He is the inventor of several appliances for facilitating the working of engines and fire apparatus. He suggested some years since the formation of a Salvage Corps for Lond. The suggestion was not adopted till long subsequently. He gave evidence before the Select Parl. Committee on Fire Protection in 1867, in the course of which he manifested a strong animus against Capt. Shaw, the head of the Metropolitan Fire Brigade, and made statements which led to considerable controversy.

BEDDALL, CHARLES, Superintendent of Agents for Lond. office of *Royal*, which office he entered in 1869. In the earlier stages of this work, when large stores of notes were being taken for the purposes of classification and generalization, Mr. Beddall rendered us some essential service, which we take this means of acknowledging.

BEDDALL, EDWARD FITCH, Associate Manager of the *Royal*, in Canada, since 1871. Mr. Beddall entered the *Royal* in 1863, and for some years fulfilled the duties of Superintendent of Agencies for the Lond. office of that co. Mr. Beddall is an energetic and progressive man.

BEE-HIVE FIRE INS. CO., LIM., founded in 1870, with an authorized cap. of £50,000, in shares of £1. In 1871 the cap. was increased by the issue of 40,000 new shares of £5, making the entire authorized cap. £250,000, in two denominations of shares. The orig. plan of the asso. was to take weekly prems.: 1d. p. week would ins. £100 for a year on an ordinary 2s. fire risk; so that the Co. reckoned, that even after paying 50 p.c. for collection and expenses, it would have in hand, as a fund to pay losses, more than is ordinarily paid for gross prems. for such ins.

In 1871 this Co. took over the bus. of the *Industrial* Fire. Since its increase of cap. it has undertaken the ordinary risks of F. ins. Among the trustees of the Co. are Lord George Hamilton, M.P.; Mr. Thomas Brassey, M.P.; and other well-known gentlemen. Mr. J. Baxter Langley is Chairman, and Mr. Philip Dyke is Sec.

BEE-HIVE SO., at *Golden Bee-Hive*, by St. Clement's Church, Strand, founded 1711, for birth, marriage, non-marriage, and service ins.

BEECH OIL ANNUITIES.—See Hist. of ANNU. ON LIVES under date 1714.

BEELE'S BOTTOMRY.—This was a project of the South-Sea period (1720). It had relation to the extension of the application of the contract of bottomry, of which we shall give a detailed hist. presently. No exact record of this particular project can be found ; but some general remarks, which probably apply to it, will be given under BOTTOMRY.

BEER-SHOP KEEPERS, MORTALITY OF.—See INN AND BEER-SHOP KEEPERS.

BEETHAM, WILLIAM, was the first Sec. of *Eagle* Ins. Co.

BELFAST.—A manufacturing town in the north-east of Ireland, with a pop. of about 250,000, chiefly engaged in the linen trade. For some years—especially between 1850 and 1860—it was remarkable for the large number of fires occurring. The most serious was that occurring on the 1st of July, 1859, when Victoria Chambers were burned down—the damage being estimated at £100,000. Between 1858 and 1867 the fires averaged 37 p.a. ; and yet a considerable portion of the property remained uninsured. Thus in 1859, out of 40 fires, in 6 cases there was no ins. In 1860, out of 33 fires, 7 were unins. In 1861, 40 fires, 9 unins. ; 1862, 47 fires, 11 unins. ; 1863, 23 fires, 9 unins. ; 1864, 28 fires, 10 unins. ; 1865, 48 fires, 5 unins. ; 1866, 35 fires, 14 unins. Thus out of a total of 294 fires in those years, in 71 cases there was no ins. It is difficult to understand the cause of this. The principle of average is embodied in all fire pol. issued in this town, except those upon private dwellings. This unusual procedure is by special agreement of the offices.

The town has a special Building Act, which however was said at one time to be very little attended to. It has an excellent fire brigade ; while the natural pressure from the new water-works will throw a jet 180 feet high. Capt. Shaw, now chief of the Metropolitan F. Brigade, gained his experience here. The fire offices employ a *Fire Inspector*, who attends all fires, and looks after the interests of the office by removing salvage, etc. He afterwards examines carefully into the causes of fires. The result of all this is a marked improvement in the per-centage of loss of late years. Yet it was given in evidence before a Parl. Committee as recently as 1867, that the F. offices had for some years lost in this town about £5000 p.a. more than the gross prems. received out of it. But young fire offices are still found hardy enough to venture there in the hope of profit, or in the desire for prems. !

A survey was made of this town on 1st Jan. 1757. The number of houses was 1779, containing 8549 inhabitants, of whom 7993 were Protestants ; number of looms 399. Another survey was made in Jan. 1782, from which it appeared that the town then consisted of 2026 houses, containing 13,105 inhabitants—6133 of whom were males, and 6972 females ; looms 388 ; and houses for selling beer and spirits 119, or a 17th part of all the houses.

BELFAST FIRE INS. CO., LIM., founded towards the close of 1871, with an authorized cap. of £250,000, in 100,000 shares of £2 10s. Calls not to exceed 5s. p. share, nor to be made more frequently than at 3 months' intervals, after 21 days' notice. The prosp. said the Co. had been formed "for the purpose of conducting F. ins. bus. on a system of equitable rating, in accordance with the character and merits of the risks." Again, "For some years past the want of a local ins. co. in the North of Ireland has been seriously felt, and at the present time a difficulty is experienced in effecting ins. for large amounts. The rapid increase of the pop. of Belfast, and the vast development of the trade of Ulster, demand add. facilities for the ins. of property in the district, which is daily increasing in value and importance." But "the operations of the Co. will not be confined to any particular district, but may be extended to all the principal towns in Gt. Brit., or wherever a remunerative bus. may be obtained." Mr. Henry G. Rule was founder, and is General Manager of the Co.

BELGIUM.—The mania for ins. projects in the early part of the last century extended from England to Holland and from Holland into Belgium ; hence we hear of a new co. in Liège ; and another at Metz, in Lorraine ; and symptoms were shown of extension into Flanders and the German States. But the cos. so formed were not of a lasting character. After the restoration of general peace Belgium possessed no ins. asso. of any kind. It was only in 1818 that the earliest of the cos. now existing were formed—a fire and marine ins. co. in Antwerp, and two fire cos. in Brussels. In 1821 some other cos. were formed ; and then a number of marine ins. cos. in rapid succession ; so that during the years 1828 and 1830 maritime risks to any extent could be covered at Antwerp. After the revolution of 1830, and the separation of Belgium from Holland, the bus. of marine ins. again languished ; and it is only of late years that it has once more revived.

About 1838 a combination of all the marine ins. asso. which then remained was formed under the title of a *Réunion d'Assureurs*. The results of this combination were most satisfactory. Whatever risks were accepted by any one of the partners were divided among the community in certain determined proportions. There being 13 associated offices : 8 of these took two 27th shares each ; 3 took three 27ths ; and 2 one 27th. Each associate was allowed to refuse its share ; the same being then distributed among the acceptants. At length so many cos., home and foreign, applied to join this combination, that the proportion for each became too small, and no more associates were admitted. An average-stater (*Dispatchor*) was employed for the special purposes of the asso. A

general system of obtaining information on all facts which might influence the value of marine risks was adopted. A strict survey was held of all ships landing and receiving their cargo. All claims were examined by a special commission of underwriters, under the superintendence of a *Recorder*. All expenses attending these operations were provided by levying a per-centage on the amount of all claims for average; and other measures of protection were taken for the common good.

In 1841 there was organized, under special decree from the King, a permanent Central Statistical Commission. In 1845 authority was given for the estab. of provincial or local statistical commissions.

M. Quetelet drew up some notes as to the scope and nature of the obs. to be undertaken by these commissions. He said therein, "The study of the influence of the seasons on diseases, and the sanitary state of the country in general, has not yet received the same attention [as some other branches of inquiry]; but everything concurs to inspire us with the hope of receiving the assistance of active and learned physicians, who appreciate the advantages of a system of obs. which would lay the foundation for the complete medical statistics of the kingdom." The range of inquiry extended to: (1). *Meteorology and Physics* [with 11 sub-divisions]. (2). *Chemistry*: Analysis of air and water. (3). *Botany and Agriculture* [with 10 sub-divisions]. (4). *Zoology* [with 7 sub-divisions]. (5). *Man*, with the following sub-divisions: Fecundation; births; marriages; deaths and their causes; diseases and their duration; insanity; crimes; suicides; consumption of food; etc.

About 1841 another combination of marine insurers, known as the *Cercle d'Assureurs Particuliers*, was founded. This asso. consisted of 20 members, each of whom participated in an equal proportion in the ins., without, however, in any case participating in the risks on one and the same vessel to a greater amount than £40, and without there being any responsibility amongst the members. The maximum of the "cercle" was, therefore, limited to £800 on the value of a single risk. In the 9 years 1841-9, inclusive, the sums ins. amounted to £1,305,332. The prem. thereon (less "returns" £1000), £30,195. The brokerage was £1516, being just under 5 p.c.; the losses and averages, £18,197, being 58.34 p.c. of prem. (or 1.394 p.c. on sums ins.) For re-insurances there was paid £2180, being 7 p.c. on gross prem.; and there was recovered on these £2000, being 6.41 p.c. The expenses were £531, or 1.31 p.c. on prem. There was reserved for "valuations" £1055; leaving net profits £8716, or nearly 28 p.c. on prem. received. We have not seen the more recent returns.

Of late years there has, we believe, been more competition in the bus. by the formation of many new cos.—most of which, however, are very prudently managed.

In the 6th Rep. of Reg.-Gen. (1845), are given some very interesting statistics of the births, marriages, and deaths in Belgium, for the year 1842. We observe in these returns that the divorces pronounced each year are recorded as a set-off against the marriages of the year. This should be done in all countries. In 1842 there were 29,876 marriages—21 divorces. The returns on all subjects connected with the V. sta. of the pop. are kept with great exactitude: yet some years since M. Quetelet observed that 1 in 65, or about 15 p. 1000, of the living escaped enumeration.—(*Assu. Mag.* ii. p. 61.)

With a view of avoiding such defects in the future, M. Quetelet pointed out that too much had been left to mere form, and that the intelligence of the citizens had not been appealed to:

There should have been selected, I think, in each town, a dozen instructed persons, who should correspond with a central committee, so as to insure uniformity and exactitude in the data collected; and who should moreover name in each quarter of the town or commune other individuals known for their zeal and activity, who might superintend in their several localities the detailed operations, and impress upon all their importance and utility. This kind of influence efficiently exercised by persons held in regard would, jointly with the measures of the local authorities, have produced a very good effect. The local authorities, in fact, do not always perform that which is required of them with all the caution and exactitude demanded by science; they confine themselves to taking without thought whatever replies are made to them.

At the census of 1846 the total number of houses in the kingdom was 829,561—of these, 799,848 were inhabited, and 29,713 uninhabited, while 160,471, or 20 p.c. only, were ins. against fire, for a total of £43,721,212, being an average of £272 each house, and just £10 for each inhabitant.

Some time before 1846 the attention of the Gov. of this country was occupied with the problem of whether or not the State should undertake a general system of ins., or leave it in the hands of individuals or asso. The advocates of the State system represented that the profits of ins. were so large that, if secured by the State, a great remission of taxation would take place. On the 27th Dec., 1846, a special commission was appointed to inquire into the project. By the end of 1847 this Commission brought in a proposal for "A general system of Ins. against Fire, Hail, and Mort. amongst Cattle," to be undertaken by the State.

It turned out that this Commission had omitted to inquire at what cost to the public treasury such a law could be carried into effect, or whence the profits—estimated by some to amount to as much as £400,000 p.a.—were to arise. The matter was therefore again referred, this time to the Central Committee of Statistics, and to some other persons specially selected by the Minister of Finance. The result was the rejection of the plan as a State measure.

In the course of the inquiries by the last-named Commission, some interesting facts were obtained. It was estimated that the total value of the buildings in Belgium was £84,000,000; of the furniture, £13,600,000; total, £97,600,000. It was found that the average rate of prem. for fire risks of this class was 85 cents per 1000 francs, or 1s. 9d. p. £100. The Commission had assumed 2s. per £100, in order to be on the safe side. This would produce a prem. income from the above classes of property of £97,600 p.a.

Inquiries through the proper Gov. departments had shown the mean value of property destroyed by fire in each of the years 1839, 1840, and 1841, was £76,220. From 1844 to 1848, inclusive, £94,416. Average over the whole period, £85,318; but this was not all from buildings and furniture.

As regards expenses, the Commissioners considered that at starting there should be a valuation of the entire house property of the kingdom. This they estimated would cost £32,000. The ann. expenditure they put at £12,000.

The number of proprietary F. ins. cos. authorized since 1830 was found to be 12; of which, however, only 8 were carrying on bus. at the date of the Commissioners' report. According to the returns from 7 of the principal of these for 1848, the total risks ins. by them amounted to £57,128,424. The prems. amounted to £49,278; losses, £26,881; expenses, commission, etc., £17,028; together, £43,909; leaving profit £5369, or about 11 p.c. on the prems. Taking the bal. of each co. separately, but 3 were found to have made any profit.

In 1849 a scheme of *Deferred Gov. Annu.* was adopted for Belgium. The following is a brief outline of its provisions.

1. The scheme is estab. under the guarantee of the State. 2. Any person not under 18 years of age may, by a single payment, purchase a deferred annu. to commence at not less than 10 years from the date of purchase. 3. A married woman, in order to purchase a deferred annu., must deposit the authority of her husband. Magistrates have power to make order if husband refuses without good cause. 4. The rates are calculated from actual mort. at 5 p.c. int. 5. The minimum is fixed at 24 fr. (say £1); the maximum annu. that can be purchased is 1200 fr. (say £50). The purchase-money for an annu. beyond that will be forfeited to the State. 6. Any sum of 5 fr. and upwards received by way of deposit towards purchase of annu. 7. The annu. may be made to commence at 55, 60, or 65, at option of purchaser; and he may have annu. commencing at different periods. 8. Every person depending entirely upon his labour for subsistence, and who becomes permanently disabled by accident or failure of health before his annu. becomes payable in ordinary course, shall receive it immediately, provided 5 years have elapsed from its purchase, and the annu. does not exceed £15. 9. The payments are considered irrevocable, excepting those which a married woman has made, or those which, under art. 6, have not been converted into annu. 10. The families of the assu. have no claim on the fund; but in cases of extreme poverty the funeral expenses of those who die after becoming entitled to the annu. will be paid out of the fund. 11. The annu. are not liable to cease or be forfeited except in certain cases where they exceed £15. 12. Each person is permitted to make his payment in the name and for the benefit of a third party, to whom alone the annu. will be payable. 13. The annu. are paid in monthly instalments by the Gov. agents in the various places where the annu. reside, and only to those who are residing in the kingdom. 14. Every annu. has a little book of account showing the payments, etc., given to him. 15. Royal decrees will determine the form and entries of the book, as well as the mode of proving age, residence, and continued existence of insured. 16. The fund is under the management of 5 commissioners named by the king. 17. All receipts for annu. paid direct into treasury. 18. These to be applied in purchasing Gov. funds. 19. Accounts of fund to be made up each year. 20. Each provincial council selects one of its members to examine accounts. 21. All acts and legal documents necessary for carrying into effect the provisions of this law are delivered gratis, and free of stamp and regis. duty. 22. During first 5 years after promulgation of the law the annu. may be granted, commencing only 5 years after date of purchase. [POOR, INS. FOR THE.]

We have some account of the transactions of ten of the leading F. cos. for the year 1849—in some cases the financial year extended into 1850. [The oldest F. co. is the *Securitas* of Antwerp, founded 1819.] These offices ins. in the year £123,419,190, receiving in prems. £129,724. The prems. varied from '071 to '257 p.c.; the average over the whole being '0107, or 2s. 2d. per £100 ins. The losses were £56,000, varying from '022 in some cos. to '056 in others, p.c. on the sums ins. The average being '046, or 11d. per £100 ins., at the rate of 44 p.c. on the prems. received.

In 1856 M. Quetelet pub. a Mort. T. for Belgium. [BELGIUM MORT. T.]

The pop. in 1863 was 4,893,021; its density 432 to the square mile, being greater than that of any other European country. The rate of mort. however, only a little exceeds 22 per 1000 (Dr. Farr, 1856).

Belgium has most of its fire arrangements on the French plan; and the city of Antwerp adopts the mode of action and drill laid down in the manual of the Parisian Sapeur Pompier. Mr. C. F. T. Young tells us (*Fires, Fire Engines, etc.*, 1866):

In Belgium paid and volunteer fire brigades exist in most of the cities, important towns, and parishes, all of which are provided with engines, pumps, and equipments. Some of these brigades are armed and equipped as soldiers, and reside in barracks, being always ready to start the instant a call is received, to any fire, either in the town or in the country. In many other parts will be found volunteer fire brigades, formed out of the members of the town guard, who are found to render most efficient service at fires, with that spirit for which volunteers are always distinguished. Their uniform and equipments are generally the same as those of the infantry of the town guard. The greater part of the other portions of the kingdom are provided with fire appliances, which are worked by associations of workmen, such as from their business occupations are most likely to be able to render efficient service at fires. They do not wear uniform or arms, and some of them receive a certain reward for their services, proportionate to the value of them.

Under ANTWERP we have already given some account of the maritime legislation, and the ins. ordin. of that city; as also of the operations of the marine ins. asso. there. Under HANSEATIC LEAGUE, and NETHERLANDS, further reference will be made to these topics.

BELGIUM, TABLE OF MORTALITY FOR.—In 1856 M. Adolphe Quetelet pub. the following T. of Mort. for Belgium. It is based upon the entire pop. of that country, and represents the combined results of male and female life. [MORT. T., HIST. OF.]

Age.	Living.	Dying.	Expectation	Age.	Living.	Dying.	Expectation	Age.	Living.	Dying.	Expectation
0	1000	149	38.18	34	540	8	28.91	67	243	14	9.47
1	851	56	43.78	35	532	8	28.34	68	229	14	9.04
2	795	31	45.82	36	524	8	27.77	69	215	15	8.60
3	764	19	46.64	37	516	8	27.19	70	200	15	7.91
4	745	15	46.85	38	508	8	26.60	71	185	15	7.83
5	730	10	46.77	39	500	9	26.03	72	170	16	7.57
6	720	9	46.44	40	491	8	25.47	73	154	15	7.18
7	711	8	46.02	41	483	8	24.91	74	139	15	6.89
8	703	6	45.51	42	475	8	24.27	75	124	13	6.69
9	697	6	44.93	43	467	8	23.72	76	111	12	6.42
10	691	5	44.28	44	459	8	23.13	77	99	11	6.14
11	686	4	43.60	45	451	8	22.53	78	88	10	5.86
12	682	3	42.95	46	443	9	21.93	79	78	10	5.54
13	679	3	42.04	47	434	9	21.37	80	68	9	5.29
14	676	3	41.22	48	425	8	20.79	81	59	8	5.01
15	673	3	40.40	49	417	8	20.20	82	51	8	4.72
16	670	4	39.58	50	409	8	19.59	83	43	7	4.51
17	666	5	38.81	51	401	8	18.97	84	36	6	4.22
18	661	8	38.10	52	393	8	18.35	85	30	5	3.97
19	653	8	37.57	53	385	8	17.70	86	25	5	3.74
20	645	8	37.06	54	377	8	17.06	87	20	4	3.45
21	637	9	36.51	55	369	8	16.42	88	16	4	3.29
22	628	8	36.01	56	361	8	15.77	89	12	3	3.09
23	620	8	35.49	57	353	8	15.12	90	9	3	3.11
24	612	7	34.92	58	345	8	14.45	91	6	1	3.12
25	605	7	34.32	59	337	9	13.80	92	5	1	2.89
26	598	7	33.72	60	328	10	13.16	93	4	1	2.52
27	591	7	33.11	61	318	11	12.56	94	3	1	2.12
28	584	6	32.50	62	307	12	11.97	95	2	0	1.90
29	578	7	31.85	63	295	12	11.43	96	2	1	1.71
30	571	7	31.24	64	283	13	10.92	97	1	0	1.50
31	564	8	30.62	65	270	13	10.43	98	1	1	0.08
32	556	8	29.87	66	257	14	9.93	99	0		
33	548	8	29.49								

BELL, GEORGE WILLIAM, Sec. of *Law F.* since 1868 ; he has been many years in the same office, holding various positions.

BELL, JAMES C. C., was Man.-Director of *Imperial F.*, from 1840 down to 1867. He was instrumental in opening up a very large and important foreign and colonial connexion for the Co. He was also a Director of the *Imperial L.*

BELL, THOMAS, Man. of *Sheffield and Rotherham* from its commencement, after it became the *North of England*, down to 1850. From 1850 to 1854 he was Sec. of *Anchor F.* and *L.* In 1855-6 he was Sec. of *Hull and Lond. Fire*, and Sec. and Act. of *Hull and Lond. Life*. In 1868 we find a gentleman of the same name Act. of *Life Assu. Union*.

BELLAMY, W. F., was Sec. of *Anchor F.* and *L.* in 1854 and 1855.

BENECKE, WILLIAM, pub. in Hamburg, in 1805, *System des Assekuranz und Bodmereiwesens* ; being a system of ins. and bottomry according to the laws and usages of Hamburg, and the principal mercantile nations of Europe.

In 1806 Mr. Benecke endeavoured to found in Germany a *L. asso.* on the principle of the *Amicable So.*, which had been then estab. for a century in Lond. We shall give the result under **GERMANY**.

In 1814 William Benecke (we presume the same, but then described as of Lloyd's) pub. in Lond., *A Treatise of the Principles of Indemnity in Marine Ins., Bottomry and Respondentia, and on their Practical Application in Effecting those Contracts, and in the Adjustment of all Claims arising out of them ; for the Use of Underwriters, Merchants, and Lawyers*. This work, which is of the very highest authority (and is exceedingly rare), was trans. into French in 1825, and into Italian in 1828. In the U.S. the work has been incorporated with Stephens', and is pub., "Stephens and Benecke on Average and the Adjustment of Losses in Marine Ins." In 1851 an ed. was pub. in Hamburg, enlarged and corrected to that time, by Vincent Notte.

BENEFACITOR ASSU. CO., FOR LIFE, FIRE, AND REVERSIONARY INTERESTS.—This Co. was projected in Manchester in 1851. It proposed to transact ins. bus. in "all its branches and ways according to law." It never got beyond prov. regis.

BENEFICE (Lat. *Beneficium*).—A word denoting Church preferments of every class except bishoprics. They may be with or without cure of souls ; but the term is usually confined

- to what are popularly called "livings," as distinguished from dignities. [NEXT PRESENTATIONS.]
- BENEFICENT LIFE ASSU. SO.**, founded in 1852, and died out in the same year, having been written down a swindle! The projector is reputed to have been Mr. G. R. H. Denison.
- BENEFICENT LIFE.**—Projected in 1854; but abandoned before complete regis. in favour of another name—the *Diadem*.
- BENEFICIAL ADVENTURE UPON THE LIVES OF CHILD-BED WOMEN**, "held at Pratt's Coffee-house, in Cateaton-street, between St. Lawrence Church and the corner of Aldermanbury." This was one of the ins. schemes founded in 1711—reign of Queen Anne—of which all we know of it will be found under CHILD-BIRTH INS.
- BENEFICIAL MARRIAGE INS. OFFICE**, at Mr. Gray's, Swan-yard, founded in 1710.
- BENEFICIARY.**—He that is in possession of a benefice; also a *cestui que trust*.
- BENEFICIUM NATURÆ.** *Bénéfice de la nature.*—A term by which the French denote the curative process of nature, when unaided by medicine; and which we popularly express by the term "effort of nature."—*Hoblyn*.
- BENEFIT OF CLERGY.**—An arrest of judgment in criminal cases. The term was frequently used in former Acts of Parl. The right was abolished in 1827.
- BENEFIT SOCIETIES.**—Another name for Friendly Sos. Perhaps, strictly speaking, implying the receipt of some benefit beyond that purchasable by their contributions. Regimental Benefit Sos. were abolished in 1849, by 12 & 13 Vict. c. 71. The 23 & 24 Vict. c. 13 (1860), provides that members of benefit sos. shall not incur forfeiture by enrolment as volunteers or by service in any corps of yeomanry. It will be more convenient to treat of these sos. in conjunction with FRIENDLY SOS.
- BENEVOLENT ASSOCIATIONS FOR ORPHANS AND WIDOWS.**—There exist in Gt. Brit. a number of asso.—we do not speak here of the eleemosynary class—for the benefit of orphans and widows, supported by the subs. of their members, managed with great frugality, and not unfrequently, in the present day, with considerable skill. We hope to furnish an account of them, more or less complete, under the head of WIDOWS' FUNDS.
- It was in view of a scientific investigation of the affairs of some of these asso.—for they abounded during the last century—that many of the earliest problems in L. contingencies were practically applied. It will be remembered that Dr. Price obtained some of his most apt illustrations from the experience of the *Asso. among the Lond. Clergy*, and the *Asso. of the Ministers in Scotland*. And even to the present day we draw much of our practical knowledge of certain branches of L. contingencies from similar sos. now existing—especially those in India.
- BENEVOLENT FIRE, LIFE, AND LOAN INS. CO.**, founded in 1838, and carried on bus. until 1842, when it passed out of existence. Its duty return in 1838 was £4; in 1839, £13; 1840, £52; 1841, £12—total, £81.
- BENEVOLENT UNION SO., THE**, founded in 1797, for granting annu., and for the relief of its members in case of sickness. It would appear that the So. was, by its regulations, limited to 61 members, and that it was not to be dissolved so long as seven members remained. Its affairs were afterwards in Chancery, in the cause of *Beaumont v. Meredith* (1814), when it was held that such a so. was merely a partnership, having no corporate character. In a suit, therefore, against some of the trustees for an account, alleging a dissolution contrary to the articles, all the other members must be parties.
- BENGAL, MORTALITY IN.**—Several tables have been prepared, showing the rate of mort. in this Presidency, both in the military and civil services; but as the subject is surrounded with many important considerations, it can be more effectively discussed under INDIA.
- BENNETT, JAMES**, was Sec. of Lond. branch of *Provincial* during 1859 and 1860. In 1861 he was Sec. of Lond. branch of *Scottish Indisputable*.
- BENTHALL, HENRY**, was Act. of *Lond. and Continental* from its commencement down to its trans. in 1859.
- BENTHAM, SIR SAMUEL**, in 1797, proposed a scheme for placing tanks of water on houses and buildings, with a simple system of perforated pipes, to which might be readily attached hose and branch pipes, as an improved means of extinguishing fires.
- BENTHAM, WILLIAM**, Resident Sec., in Dublin, of *Standard Life*, and Man. of its bus. in Ireland since 1863. Mr. Bentham was trained to the bus. of banking; and, like many other bankers, turned his position and influence to account in advancing the interests of life ins. He then represented the *Minerva*. In 1853 he became Sup. of agents in England for the *Standard*, which position he held with great success until he received his present appointment. Mr. Bentham lives pleasantly in the memory of his large circle of English friends.
- BENTHAM, W. D.**, Sec. of *Standard Marine* since 1871.
- BENTLEY, JOSEPH.**—This gentleman's name has been familiar to the ins. world for many years. His hist. is a remarkable one. He was reared as a simple factory-lad, without education or without friends to help him forward. He commenced his literary career by aiding in the compilation of *Piggott's Commercial Directory*. He ultimately became a self-constituted lecturer and writer on education. From this he drifted into the subject of savings banks and ins. asso. He knew nothing either of the legal or the actuarial

constitution of the latter; hence in his various pub. he fell into many errors; and was indeed too often but the tool of designing persons who employed or encouraged him. In 1855 he promoted the *Annuity Building and General Assu. Co.*; but it fell through. In 1856 he promoted the *Savings Assu. Co.*, with no better fate. In 1862 he pub. the *Manual of Life Ins.* In 1865, *The Financial Position of Life Offices*—a pub. full of errors of the most absurd kind. He was the author of many other pub. not bearing specially upon ins. Of these his little book called *Health and Wealth* was prob. best known—and deservedly so. He experienced on several occasions the injustice of the law, in the matter of prosecutions for libel. He was ultimately struck down by paralysis; and then several gentlemen connected with ins. offices, who had known his career, and judged favourably of his motives, afforded him some relief—of which he stood urgently in need. He died in Feb., 1872, aged 67 years.

BENWELL, JAMES BENJAMIN, pub. in 1821, *An Essay on Interest and Annu.*, chiefly respecting those cases when Compounded by Instalments intercepted within Yearly, as Half-Yearly, Quarterly, Monthly; embracing a Summary of the Ambiguities averred of the Solutions on Dr. Price's and De Moivre's Principle, with a Critical Examination into the Source of them. A Brief Introduction to the Study of Life Assu., Notes, Illustrations, etc. This little work purports to be an answer to Mr. William Rouse's *Investigation of the Errors of all Writers on Annu.*, etc., pub. 1816. It contains some orig. ideas, and is therefore worth reading when it can be met with.

There also appeared in the *Phil. Mag.* (vol. 50, p. 164), *Theorems for Determining the Values of Increasing Life Annu.*

In 1830 he pub. *New Formulae in the Valuation of Annu. on Lives, etc., and Tables of Estates Certain and Lifehold.*

Mr. Benwell practised as a Consulting Act., and by way of adv. at the end of his book, 1820, was the following:

The author on this occasion respectfully notifies that he undertakes the investigation of all cases relating to contingent annu., assu., revs., fines, successive lives, survivorships, etc., embracing every component diversity classed in the denomination of life contingencies, with generally every species of calculations depending on events of chance, etc., for all which, an extensive examination into those sources and works of science, where such kind of matter is dispersed, he presumes has fitted him to be entrusted with; and unless the path be illuminated by mathematic art, it is impossible successfully to pursue these researches, or discriminate in a philosophical view their importance in an organized state of community. It is well known that a maximum portion of the personal property of this kingdom is of a tenure contingent, and such is, from defective principles resorted to, ever undervalued in the stock-market, even with concomitant causes that operate so direct, these refer to minutiae of circumstances well understood; thus all rev. interests are so depressed under their absolute value derived from the real chances of life; but in all negotiations the public mind is recalled to the fact, that such value can alone be made the basis of them justly, and this, as fortuitous restrictions supervene, vary and fluctuate accordingly, and here to determine a fair and equitable value, the chief datum is the T. of obs., and such best suited are those of Sweden, and M. de Parcieux, of the rate of mort. as actually existing in a mixed body of life annuitants composed. The author, therefore, offers himself as arbiter in all such concerns, and solicits patronage and support in this respect. All cases in reference to be made to him, at No. 18, Aske-terrace, Hoxton, or 98, Royal Exchange, will be specially regarded.

We consider the above sufficiently unique to be preserved.

BEQUEATH.—To leave by will to another. The word is usually applied to personal property only; while *devise* is usually applied to real property. But the words may be used in either sense.

BEQUEST.—A gift of personal property by will; a legacy. A pol. of ins. on the life of a debtor is a security for a sum to be paid; and may pass in a will under the words "debentures or debts." This was so decided in *Phillips v. Eastwood*, 1835. [MORTMAIN.]

BERKSHIRE AND COUNTIES INS. ASSO., founded "by the clergymen, yeomen, and tradesmen, of Berks and other counties," in 1709, on a scheme of mut. contribution. The asso. had some very remarkable features, which we shall give in some detail under HIST. OF LIFE INS. [CLERGY, LIVES OF.] [COMPLETE INS.] [SURRENDER VALUE.] It is prob. that similar sos. to this were estab. in other counties about the same period.

BERKSHIRE, GLOUCESTER, AND PROVINCIAL LIFE AND FIRE ASSU. CO. [named in the first instance the *Berks L. and F. Assu. Co.*], founded at Reading, in 1824, with an authorized cap. of £500,000, in 10,000 shares of £50. The Earl of Craven, Lord-Lieut. of the county, was President. The vice-presidents, trustees, and directors, were men of position. The prosp. said:

In the hist. of our own country there never was a period in which the union and advantages of society were more effectively promoted by public inst. than the present. Among these, none surely can lay a fairer claim to extensive utility than the *Inst. of Assurances*, founded on provident and equitable views. The flourishing condition of the estab. of this nature already in existence, whilst it redounds to the honour of the age in which we live, furnishes the most complete proof of their salutary tendency. Upon this conviction, and on the model of the best and most approved inst. of a similar character, the present estab. has been founded.

No proprietor, "except presidents, trustees, and directors," was to hold more than 50 shares, unless by bequest, or operation of law. Directors were to hold 50, and might hold 100. The liability was restricted to the amount of shares held:

Every shareholder, as a condition for holding his shares, to assu. or cause to be assu. £50 or more in the L. depart., or £300 or more in the F., on any number of shares under 10. £100 on L., or £1000 on F., on any number of shares from 10 to 20; £150 or more on L., and £1500 on F., on any number

of shares from 20 to 30; £200 on L., or £2000 on F., on any number of shares from 30 to 40; £250 on L., or £2500 on F., on any number of shares from 40 to 50. But in default of effecting any such assu. within 12 calendar months, to pay a fine of 2s. p. share. Shareholders making default in complying with calls for their subs., in pursuance of the rules and regulations to be made, or D. of sett. to be entered into, to forfeit their shares.

Persons assu. for the term of L., or against F. for 5 years, to parti. at the end of every 5 years in the profits of the Co., after a deduction of such sum for the guarantee of the cap. as the directors may think reasonable, etc. The estab. to be conducted on principles of the strictest economy.

The Co. collected in F. duty in 1824, £379; 1825, £1517. By 1830 the amount had reached £2604. In 1829 its L. bus. was trans. to *Clerical, Medical, and General*; and in 1831 its F. bus. to the *Phoenix*.

BERLIN.—Bills of mort. were pub. at an early date in this City. In 1721 the causes of death—diseases and casualties arranged under seventy-three different heads—were introduced into them. The sexton of every parish had some years before been ordered to leave at the senate-house, at the end of every week, a list of the names of all who had been baptized, married, or buried, during that week; and in the case of the buried, the age at which and the disease by which each death took place were also to be stated. These orders, however, do not appear to have been properly attended to until 1733.

In 1747 an account was taken with the utmost care, by order of the King of Prussia, of the number of inhabitants of the city, and it was found to be 107,224. In order to be more certain, a *second* account was taken the same year, and the number found the same within 200. By 1755 the number of inhabitants had increased to 126,661. For the five years ending 1755, the average returns were as follows:—Births, 3855; marriages, 980; burials, 5054. The pop. was estimated to the burials as 26½ to 1.

Dr. Moehsen, in his *Collection of Obs. for the better Illustration of the great Usefulness and Value of Inoculation for the Smallpox*, pub. 1775, gives, in the second part of that work, 26 T. derived from B. of Mort. of this city, commencing with 1758 and ending with 1779. He had orig. made abstracts of the Bills between 1733 and 1753, but these were destroyed by fire.

He gave a T. showing the number of deaths in the city during each of the 17 years named, from all causes without distinction, but distinguishing the civil from the military pop. and the sexes in each case. Another T. shows the number of births—prob. including the still-born, as they are included in the deaths.

The Tables compared produce the following results:—

	Males.	Females.	Both Sexes.
The whole number born during the 17 years was ...	33,915	31,718	65,633
While there died of the civil pop.	30,473	30,153	60,626
Of the military	11,166	9,341	20,507
Total	41,639	39,494	81,133
Exceeding the births by	7,724	7,776	15,500

The average ann. deaths for 16 years were 4339; while for 1772 they were 8,314. In that year there were 131 sudden deaths; 98 by drowning; and 39 by hunger and misery, so returned; but prob. these causes had much to do with the increased mort. of that year.

In 1776 the collected works of Herr Sussmilch, edited by Baumann, were pub., and these contained the bills of mort. for Berlin for the four years 1752–55, with much other interesting information regarding the V. statistics of this city.

In 1783 the fourth ed. of Dr. Price's *Reversionary Payments* was pub., and therein was contained a T. of mort. deduced from the data supplied by Sussmilch, with many incidental obs. thereon. [BERLIN T. OF MORT.] Dr. Price found that 1 in 26½ died ann. in this city, being at the rate of 38 p. 1000; he found that half the children born alive died before the age of 2½ years; and that but 1 in 37 of the inhabitants reached 80. He adds by way of explanation:

Berlin for many years has been increasing very fast, by a conflux of people from the surrounding country and provinces. About the year 1700 the medium of ann. burials was no more than 1000. In 50 years, therefore, it has more than quadrupled itself. In a city increasing with such rapidity, the ratio of inhabitants to the ann. deaths must be greatly above the just standard.

In 1825 Dr. Casper pub. a work, in the third part of which he treats of the mort. among children in Berlin. It contains a variety of tables showing the numbers of births in different years, distinguishing the legitimate from the illegitimate; and of the deaths that took place among them under 15 years of age. The number of deaths by smallpox, and a few other diseases of children, both before and after the introduction of vaccination, are given; but no mention is made of their ages.

In 1835 Dr. Casper pub. another work, in which was contained a T. showing the number of deaths in every year of age from birth to 104 years, completed, of males and females separately, which took place in this city during the 12 years 1818–29, amounting to 36,895 males and 32,467 females; together 69,362. This work also contained a T. of mort. [BERLIN, T. OF MORT FOR.]

An official account of the suicides in Berlin was prepared for the years 1849–50. In the

former they were 76, in the latter 104—males 81, females 23. Hanging was the popular mode, being 48 p.c.; shooting next, being 22 p.c. of the whole. The estimated pop. of the city in 1849 was 451,435; the suicide rate was therefore '01684. In 1850 pop. 466,850—suicide rate '02213. In London the suicide rate about the same period was '01560.

The mort. of the city appears to have improved of late years. We have seen it quoted on apparently good authority under 30 p. 1000.

Berlin was the first continental city to employ a steam fire engine. The engine was constructed in 1832 for the Government by Mr. John Braithwaite, C.E., of London, and it was named the *Camel*. There is a large force of men employed in controlling and extinguishing fires. The telegraph system, after the American plan, has been tried, but led to a great number of false alarms. In 1850 various methods were being tried for increasing the efficiency of the fire brigade, and by 1852 we learn that it was placed under the command of a chief superintendent, and consisted of 1 inspector, 4 sub-inspectors, 40 sergeants, and 180 firemen—the last two classes composed of men belonging to the building trades—and 771 pumpers. There were 18 stations, 5 depôts, and 1 central station.

The conditions relating to F ins. are very stringent. When property is first proposed for ins., it is inspected by the police authorities, who certify that it is not overvalued, and every agent has to submit the offer of ins. to the police authorities before he can accept it. The Prussians consider that by preventing over-ins. they check the tendency to incendiarism.

An inquiry is instituted by the police *in every case of fire*, whether there be any suspicion of fraud or not. It is compulsory in all cases. The police collect evidence, and the Attorney-General orders the arrest, if he thinks it necessary, and prosecutes before a criminal court.

In this city is pub. fortnightly, edited by Dr. Elsner, the *Deutsche Versicherungs-Zeitung: Organ für das Gesammte Versicherungswesen*, an organ for the diffusion of information statistical, scientific, and miscellaneous, on all subjects connected with ins., fire, life, marine, agricultural, etc. We believe there is also another ins. journal pub. here.

Regarding the general ins. regulations and ins. offices, we shall speak of them under

PRUSSIA.

BERLIN, MORTALITY TABLE FOR.—In 1783 Dr. Price compiled, we believe, the first T. which had been deduced from the mort. of this city. His data, as we have said in the preceding art., were obtained from the B. of mort. for the four years 1752 55, which had been compiled by Herr Sussmilch. The T. is accompanied with the following details. The numbers born in Berlin during the four years above mentioned were, *males*, 9219; *females*, 8743; or 21 to 20. The numbers that died under 2 years of age were, *males*, 3118; *females*, 2623; or 7 to 6. The numbers that died upwards of 8 years of age were, *males*, 135; *females*, 215; or 5 to 8. The numbers that died between 91 and 105 were, *males*, 21; *females*, 55.

MORTALITY TABLE FOR BERLIN—1752-55.

[illegible]

Age.	MALES.			FEMALES.			MALES AND FEMALES.			Age.
	Living.	Dying.	Being in	Living.	Dying.	Being in	Living.	Dying.	Being in	
47	1					51	21185	514	41	47
48	1					36	20671	620	33	48
49	1					43	20051	625	32	49
50						35	19426	661	29	50
51						54	18765	407	46	51
52						35	18358	600	31	52
53						33	17758	615	29	53
54						35	17143	577	30	54
55						35	16566	553	30	55
56						26	16013	713	22	56
57						35	15300	518	30	57
58						26	14782	635	23	58
59						31	14147	566	25	59
60						24	13581	656	21	60
61						11	12925	449	29	61
62						24	12476	570	22	62
63						24	11906	598	20	63
64						18	11308	669	17	64
65						19	10639	633	17	65
66						18	10006	649	15	66
67						19	9357	566	16	67
68						14	8791	697	13	68
69						15	8094	572	14	69
70						14	7522	565	13	70
71						17	6957	450	15	71
72						11	6507	633	10	72
73						12	5874	535	11	73
74						9	5339	592	9	74
75						9	4747	550	9	75
76						7	4197	575	7	76
77						9	3622	416	9	77
78						7	3206	498	6	78
79						8	2708	372	7	79
80						7	2336	257	6	80
81						8	1979	266	7	81
82						6	1713	272	6	82
83						6	1441	252	6	83
84						5	1189	241	5	84
85						1	948	111	5	85
86						5	760	151	5	86
87						4	609	137	4	87
88						4	472	128	4	88
89						4	344	83	4	89
90						5	261	53	5	90
91						5	208	38	6	91
92						4	170	46	4	92
93						4	124	33	4	93
94						6	91	18	5	94
95						5	73	18	4	95
96						4	55	14	4	96
97						3	41	14	3	97
98						3	27	12	2	98
99						3	15	5	3	99
100						1	10	6	2	100
101						3	4	1	4	101
102						...	3	1	3	102
103						2	2	1	2	103
104						1	1	1	1	104

The above T. is compiled from the T. in the orig. German ed., opposite p. 35 ; but we have arranged our columns differently, and as we think more convenient for reference.

BERNOULLI, DANIEL [son of John and nephew of James].—A Prof. of Mathematics at Basle, and greatly skilled in the science. He was born 1700, died 1782.

In the *St. Petersburg Memoirs* for the years 1730-31 [but not pub. until 1738] was a paper, *Specimen Theoriae Nova de Mensura Sortis*. Therein he propounded the theory of

Moral Expectation, which he considered would give results more in accordance with our ordinary notions than the theory of *Mathematical Expectation*. Laplace afterwards reproduced and developed this theory. Daniel Bernouilli then passed on to consider questions of marine ins., as what capital marine ins. must have so as safely to undertake the bus. ? [MARINE INS., HIST. OF, 1730.]

In 1760 he read a memoir before the French Academy entitled, *Essai d'une nouvelle analyse de la mortalité causée par la petite Vérole, et des avantages de l'Inoculation pour la prévenir*. This is pub. in *Hist. of Academy*, 1760. [SMALLPOX.]

In a later memoir, *De duratione media matrimoniorum pro quacunque conjugum ætate, aliisque quæstionibus affinibus*, he solves a problem as to the prob. number of married couples out of 500, each of an equal age, who continue alive until the orig. 1000 are exhausted. Ordinary mort. T. do not show this. He solved the question with a simple formula, and tested its accuracy with cards. He afterwards proceeds to the case of couples of different ages. These questions assume a practical value in dealing with widows' funds, granting survivorship annu. He allows, however, that his results must not claim implicit confidence.

In the *St. Petersburg Memoirs* for 1769 are several by this author; among them, *Mensura Sortis ad fortuitam successionem rerum naturaliter contingentium applicata*. The memoir begins by noticing the near equality in the numbers of boys and girls who are born; and proposes to consider whether this is due to chance. He, however, only carries his investigations as far as this: assuming that the births of a boy and of a girl are equally likely, find the prob. that out of a given number of births, the boys shall not deviate from the half by more or less than a given number. The memoir gives some calculations and some numerical examples. It has been pointed out that the author seemed very strangely to be unaware that all which he effects here had been done better by Stirling and De Moivre long before. [PROBABILITY.]

BERNOUILLI, JAMES [uncle of the preceding].—A celebrated mathematician, born at Basle in 1654. He was the first distinguished member of the celebrated family whose name is so intimately associated with the hist. of mathematics. Leibnitz states that it was at his request that James studied the subject. This does not seem to be verified by later investigation. His principal work, *Ars Conjectandi*, was not pub. until 1713. Bernouilli had died in 1705. It appears from the preface, supplied by Nicolas, another nephew, that the fourth part of the work was left unfinished by the author. None of the family, save John, considered themselves equal to its proper completion; and his engagements did not admit of his doing so. It was therefore pub. as left by its author. The work was divided into four parts. The first consisted of a reprint of Huygens' essay, already spoken of. The second part is devoted to the theory of permutations and combinations. The third part consists of the solution of various problems relating to games of chance. The fourth part proposed to apply the Theory of Prob. to questions of interest in morals and economical science. The *Ars Conjectandi* is not included in the collected ed. of James Bernouilli's works. An English trans. was pub. by the Baron Maseres in 1795, and a French trans. in 1801. [PROBABILITY.]

James Bernouilli, it appears, had intended to treat jurisprudence as a branch of prob. in the *Ars Conjectandi*, but his premature death prevented that work from being completed. There is a memoir on the subject by his nephew Nicolas in the *Leipsic Acts* of 1711.—*Galloway*.

It is to James Bernouilli that the world is indebted for extending the Theory of Prob., and applying it to other questions than those of play; he having laid the foundation of its application as a science to the advantage of mankind instead of their amusement, or, as it might be, their degradation.—*W. T. Thomson*.

BERNOUILLI, JOHN, brother of James, and, like him, an eminent mathematician. He was, indeed, regarded as the worthy rival of Newton and Leibnitz. He was born in 1667, and died in 1748. He does not appear to have touched upon any ins. topics.

BERNOUILLI, NICOLAS [nephew of James, and cousin of Daniel], was born at Basle, in 1687, and died in 1759. He was editor of the *Ars Conjectandi* of his uncle James. He is frequently mentioned with approbation, both by his uncle and Leibnitz, in their epistolary correspondence. He visited England, where he was kindly received by Newton and Halley. He pub. a work, *De ars Conjectandi in jure*, which contains some interesting views, probably suggested by the labours of his uncle: as, for instance, the time after which an absent person may be reputed as dead; the prem. to be paid for assuring to a young girl a dowry or annu. on the day of her marriage; the relative value of differing testimonies; and the comparative chances of the guilt or innocence of an accused person. He appears to have contributed to the English *Phil. Trans.* a *Problem on the Doctrine of Chances*, in 1714. [CHANCE.] [PROBABILITY.]

BERNOUILLI'S NUMBERS.—A series of numbers first used by James Bernouilli, about 1687.

BERRIDGE, GEO. WILLIAM, Supt. of the Life department of the *Guardian* since 1872. He commenced his ins. training in the *Albion* (No. 1), which he entered in 1853. He entered the *Westminster and General* in 1856. In 1858 he was selected to fill an appointment at the *Unity General*, which he left in the same year for an appointment in the *Lond. and Provincial*, where he remained until his present appointment. Mr. Berridge

in 1865 submitted a paper to the Inst. of Act., *On the Method of Graduation applied to the Peerage Mort. deduced by Mr. Baily and Mr. Day, with Tables founded thereon.* The same is printed in *Assu. Mag.* xii., p. 220.

BERRIDGE, J., was Sec. of *Freemasons and General* from 1842 to 1849.

BERWICK, D., Man. of *Ins. Co. of Scotland* from 1843 to 1849.

BESIEGED CITIES, INS. OF.—We shall have occasion to show, under head of *INS. WAGERS*, that in earlier periods of our history it was not unusual to make wagering ins. as to the period which cities and forts in a state of siege might hold out. The siege of Paris in 1870 led to the adoption of a system of insuring against damage resulting to buildings and property from actual warfare. We propose to explain the system in detail under *WARFARE*.

BEVAN, CHARLES WILLIAM WINCHELSEA, was Man. of *English and Cambrian* from its commencement down to 1852. From 1852 to 1854 he was Sec. of *Deposit and General*. He was convicted at the Central Criminal Court, in July, 1855, for misapplying the moneys of this last-named Co. He asserted that he had lent the directors money to carry on the Co., and that the transactions on which he was charged were simply matters of account. He had just before these proceedings become Man.-Director of *Universal Provident*.

BEVERIDGE, DAVID.—The gentleman selected by the "Underwriters Agency" in the U. S. to adjust the claims of the offices belonging to that asso. arising out of the terrible conflagration at Chicago in 1871. We learn from the *Chronicle* of that city that he performed the difficult duties of his office to the general satisfaction of all concerned.

BIBLIOTECA DI GIUS NAUTICO.—A Maritime Statute promulgated in Venice in 1786. [VENICE.]

BICHAT, M.—This writer considered man to consist of two distinct and co-existent lives, called the *organic* and the *animal*, with two distinct assortments of sensibilities—the conscious and the unconscious. Each of these lives is limited to a separate set of organs, commencing co-etaneously and perishing at the same moment.

BICKNELL, G., Resident Director of *British* about 1842.

BIDDER, BARTHOLOMEW PARKER, Act. of the *Royal Exchange* in 1838. He held the appointment until 1848, when he retired, owing to severe illness, from which he died in 1849. Mr. Bidder (who was a brother of the well-known Civil Engineer, Mr. George Parker Bidder, once known as the "calculating boy") was highly esteemed both as an able theoretical actuary, and as a practical man of business. He was a Fellow of the Royal Astronomical So., and being eminent as a computer, for many years assisted in the laborious calculations of the Nautical Almanac. In 1840 he wrote a valuable report on the subject of the *Extra Prems. for Foreign Risks*, then charged by Life offices: the effect of which was to introduce a more uniform scale of charges than had previously obtained. The details of the new bonus system of the *Royal Exchange* were arranged and carried out by Mr. Bidder—the change dating from the 31st December, 1841, and taking effect seven years thereafter. Mr. Bidder having died on the 4th Jan., 1849, it chanced, curiously enough, that his pol. was the first upon which a bonus was paid by the corp., which had carried on a remunerative business from the year 1721, exclusively on the proprietary system, without having previously made any such payment of bonus.

BIDDER, SAMUEL PARKER, for some years Man. in Manchester of the *Albert*. He commenced his ins. career with the *National Guardian* in 1851, and passed over with the bus. of that Co. to the *Albert*. He died in Feb., 1872.

BIDEN, W. DOWNING, F.G.S., Act., etc.—He contributed to the *Assu. Mag.*, in 1858, a *Formula for approximating to the Expectation of a Life*.

He pub., in 1861, *Rules, Formula, and Tables for the Valuation of Estates, whether Freehold, Copyhold, or Leasehold, in Possession or in Reversion, and dependent on Terms of certain duration, or on a Life or Lives; with New Rules and Tables for ascertaining the correct market value or fair price to be given for Annu., Reversions, Advowsons, and Next Presentations, in order to secure to the purchaser a certain rate of interest on equitable terms; and a Set of Conversion Tables, for ascertaining from the price of an Annu. the cost of a Reversion, to allow the purchaser a given rate of interest with security.* 2nd ed., 1864.

In 1862, he contributed to the *Assu. Mag.* a paper, *On the Valuation of Policies of Assu.* The purport of this paper, which is an eminently practical one, may be seen from his introductory remarks:

A pol. [of life ins.] has several values, according to the purposes to which it is applied, the necessities of the holder, and the intention of the purchaser. The following pages are intended as a guide to those who, not having made the nature and uses of a pol. a subject of study, may yet have occasion to form an estimate of its value for some special purpose. The complete investigation of every possible case would be impracticable. . . .

He has also pub. the following, *Practical Rules for Valuers, with Notes on the Valuation of Freeholds, Leaseholds for Lives or for Years, Copyholds, Advowsons, and Next Presentations; also on Claims for Compensation for Property taken or damaged by the Construction of Railways or other Public Works*—which has passed through several eds.

BIGG, EDWARD SMITH.—A Director of the *Law F.* He gave evidence before the Select Parl. Committee in 1862 on Fires in the Metropolis, to the following purport:—I think that the

metropolis, and the inhabitants of the metropolis, and the Gov. through them, ought to estab. a sufficient protection against, and for the extinguishing of fires, in the same way as they estab. a sufficient protection for street peace and quietness. I think that fire is essentially a police question. The fire brigade is useful in extinguishing fire afterwards, and in preventing its spreading, but it does not at all affect the chance of fire in the first instance. I think that a fire office might usefully for the public have a voice in the arrangements of the fire brigade. I do not consider that it would be desirable for the public out of any general funds arising from Excise, or Customs, or so on, to pay the whole expense of a fire brigade. — *Vide Report of Committee.*

BIGG, FREDERICK JAMES, was one of the founders of the *Masonic and General*, estab. 1868, and has been since that date its Act. and Sec. He was Act. and Sec. of *Medical, Legal, and General* from 1846 down to its amalg. with *New Equitable* in 1857. And he was Act. and Sec. of the last-named Co. down to its amalg. in 1862.

BIGG, JOHN, Sec. of *Licensed Victuallers* from 1845 to 1850.

BIGLAND, RALPH, Garter King-at-Arms, pub. in 1764, *Observations on Marriages, Baptisms, and Burials, as preserved in Parochial Registers; with Sundry Specimens of the Entries of Marriages, etc., in Foreign Countries.* [PARISH REGISTERS.]

BIGNOLD, JOHN COCKSEGE, was appointed, under a formal deed by his father, Mr. Thomas Bignold, Sec. of country department of *Norwich Union L.* in 1816; and he held the office until 1823, when he died. [BIGNOLD, THOMAS, SEN.]

BIGNOLD, SIR SAMUEL, Sec. of *Norwich Union F.*, and of *Norwich Union L.*, which position he has occupied for upwards of half a century. He appears to have entered the service of the asso. in 1814, and to have been appointed Joint Sec. of the F. office with his father, Mr. Thomas Bignold, in 1816. He became Sec. of the country department of the L. office on the death of his brother, Mr. J. C. Bignold, in 1823. In 1818, in consequence of some serious internal disputes concerning the management of the Sos., but not affecting their stability, Mr. Samuel Bignold was brought prominently forward; and the report of the Lond. Committee of Investigation pub. that year states:—"Their [the Committee's] sentiments of respect for his character and conduct are such as would induce them to expatiate beyond the limits which they have necessarily prescribed to themselves in framing the report." On the father being deposed from office on that occasion, the son appears to have been unanimously elected his successor. At a meeting held at the York Hotel, Bridge-street, Blackfriars, on 27th July, 1818, "For the purpose of taking into consideration the charges preferred against the So. [F.] at the George and Vulture," Mr. S. Bignold—it must be remembered then a very young man—said:

There was, on the part of the Board, no desire to conceal anything. It was its wish that both the principles and conduct of the inst. might receive as much publicity as possible. The directors' desire was that this inst. should be, as it were, a house of glass, through which every person might see; they were not fearful of scrutiny. Every source of intelligence connected with the office—its books, and the state of its funds—would be open to inspection. Close investigations had already been made at Norwich by deputations commissioned for that purpose from Birmingham, Dublin, Bristol, and other places; and it was the wish of the Board that the same system of inquiry should be pursued by the Committee they had proposed to have estab. in London.

It was no doubt this frankness in an emergency that gained for the young Sec. the confidence of the Committee.

During 1837 and 1838, there was again some internal commotion among the members of the asso., one of the prominent points of attack being the remuneration of the Sec. The remuneration was then derived from a commission on the bus., upon which terms his father had orig. been appointed. With the growth of the bus. of the asso., the emoluments had increased largely; but the salaries of the Act. and staff had to be paid thereout. "Yet the residue being still a large sum"—it was understood to be upwards of £12,000 p.a.—Mr. Bignold proposed before the general meeting to give up the greater part of it, viz., about two-thirds. There has been a recent re-arrangement in favour of the So.

Mr. Bignold has taken an active part in local politics. He has been three times mayor of Norwich, viz., in 1833, 1848, and in 1853, when he received the honour of knighthood. He also represented Norwich in Parl. from 1854 to 1857. He is a Magistrate and Deputy-Lieutenant of the County of Norfolk and City of Norwich.

On the 13th Oct., 1871, Sir Samuel completed his 80th year, being a period of 57 years since he entered the office. The occasion was one of great interest. The clerks of each asso. united and presented a testimonial; while the agents of the asso. had subscribed a considerable sum of money, which was placed in the hands of Mr. C. J. Bunyon (a nephew of Sir Samuel), for the purpose of providing a suitable testimonial, which has since been presented. The shareholders of the F. Co. have presented Sir Samuel with his portrait, painted by a Norwich artist of celebrity.

At the recent meeting of the *General Hail-Storm* Ins. So., thanks were voted to Sir Samuel for having given his services as Chairman of the So. for a period of 28 years. Some four years since a very good portrait of Sir Samuel appeared in the *News*.

BIGNOLD, THOMAS, SEN., formerly of Norwich, Banker, father of Mr. J. C. and Sir Samuel Bignold, and founder of various ins. asso. The first of these was the *Norwich Fire Office*—a proprietary Co., estab. about 1790. Concerning this co. but little is now known.

In 1797 he founded the *Norwich Union Ins., or General Asso. for the Prevention of Accidents by Fire, and the Remuneration of Individual Sufferers*. By the 15th clause of the D. of sett.—bearing date 1st March, 1797—the directors were empowered to appoint, suspend, or remove officers, servants, and other persons employed, “except the Sec., who shall not be removed without consent of a majority of some general meeting.” By an add. D. of sett., dated 1st March, 1806, it was declared: “That Mr. T. Bignold shall continue Sec. while his conduct in that situation shall be as unobjectionable as it has been since the time of holding the general meeting in April, 1805.” But in the same deed it was provided, that “whenever a majority of the members shall under their hand signify their desire to displace or remove any of the officers of the So., and to substitute others in their stead, such removal and substitution shall take place accordingly.” It appears to have been agreed that the remuneration of the Sec. should be 5 p.c. on the prem. income of the asso.—he to provide an office for the bus., and pay the clerks.

In 1808 he founded the *Norwich Union So. for Ins. on Lives, and Granting and Purchasing Annu., Endowments, etc.* By the D. of sett. of this So., dated 1st July, 1808, it was provided (clause 12), that “a majority of such general meeting shall elect a Sec., but his election shall be confirmed by a second general meeting;” and by clause 20, “That Mr. Thomas Bignold shall be the Sec., and that he shall be allowed to nominate either of his sons, John Cocksedge Bignold, Thomas Bignold, or Samuel Bignold, as his successor.” The remuneration for the office of Sec. appears to have been fixed at 5 p.c. on the prem. income—whether this included purchase-money for annu. did not appear clear; but out of this the Sec. was to provide offices, and pay the salaries of actuary and clerks, as in the case of the F. asso.

In 1816 an agreement was entered into between Mr. T. Bignold and his two sons, J. C. Bignold and Samuel (Mr. Thomas had been appointed Solicitor of the L. office), that he, Mr. T. Bignold the elder, should take the management of the office in Lond., and reside there [in the orig. D. of sett. of the F. asso. it was prohibited from doing bus. in Lond. at all—NORWICH UNION FIRE], and that John and Samuel should manage the bus. at the Norwich office; that John should be nominated to succeed his father as Sec. of the L. office, and that Samuel should be appointed Joint Sec. with his father to the F. office; and that the two sons should receive all the per-centages to which the Sec. was entitled from both offices, except £1000 a year, and the per-centages on the ins. effected in the Lond. department, which were to be received by their father.

In pursuance of such agreement, Mr. T. Bignold signed an appointment of his son, J. C. Bignold, to succeed him as Sec. to the L. office, and gave the directors notice thereof; and Mr. S. Bignold was appointed Joint Sec. with his father to the F. office. This last arrangement was confirmed at two general meetings of the F. asso. in this form: “That Mr. Samuel Bignold be Sec. of this So. jointly with Mr. Thomas Bignold; and that whenever the said Thomas Bignold shall cease to be Sec., the said Samuel Bignold shall then be sole Sec.”

Soon after this Mr. T. Bignold proceeded to Lond., and commenced active bus. operations for the asso. there. It appears—prob. from the fact of the management being now divided—that a good deal of discontent arose in some of the country agencies of the F. office, regarding the settlement of claims. The office was in fact charged with both delay and illiberality.

The result was that, by the summer of 1818, matters arrived at a crisis. A public meeting of the members of the two asso. was convened, and a Committee was appointed to investigate the affairs of both Sos. The following somewhat general charges were brought against Mr. Bignold, viz., that contrary to the D. of sett., he had exercised uncontrolled authority over the funds and affairs of both Sos. for upwards of ten years; that the investments on account of the L. office were for the most part made in his name, and it did not appear that any declaration of trust had been executed by him; that the directors were his nominees, and mere cyphers; and that he had involved the F. office in litigation without the consent and knowledge of the board. For all these reasons it had, it was alleged, become necessary to remove him from his office.

The committee of which we are now speaking, and which may be designated the committee of claimants, held its meetings at the *George and Vulture Tavern*—there was another committee, of which we must presently speak. The report of the first committee was presented 27th Aug., 1818, and contained the following passage:

That they find in the course of their proceedings, and upon every occasion, and in every transaction, the real and effective power of the So. [Fire] appears to have devolved upon Mr. Thomas Bignold. They find that the authority and interference of the directors in the concerns of the So. have been merely nominal, and in constant subservience to their own officers.

This report will be again referred to in our hist. of the respective asso.

It no sooner came to the knowledge of the officials in Norwich that a meeting of the first-named committee had been held, than they proceeded to London, and convened a meeting of insurers, which was held at the *York Hotel*, Bridge-st., on the 27th July, 1818. Mr. Bignold, sen., said at this meeting:

There being but few insurers in London, it was not judged necessary to form a committee there; but he had himself suggested, and been desirous of it long previous to the reports which had lately

appeared in the newspapers. It should not be forgotten that all these reports were *ex parte*. When the documents connected with the subject were produced, he had no doubt that they would clear him of all imputation.

It was said at that meeting that the F. ins. in Lond. covered about 4 millions sterling. A committee was appointed to inquire and report. It was at this meeting that Mr. S. Bignold made the speech which we have already quoted in his biography.

On the 25th Sept., 1818, the report of the second committee was presented to a meeting, it was said, of nearly 1000 members. The report spoke of the general soundness of the assos. ; but recommended the removal of Mr. Bignold, sen., from office. Mr. Brooke, a member of the committee, said :

I certainly, in common with the rest of the committee, agree to the necessity of his removal, as recommended in the report ; but I by no means intend—nor can anything provoke me as an individual—to detail the various circumstances in his conduct which have induced us to come to this resolution. The committee, after the most serious consideration, in which feelings of respect towards the other branches of Mr. Bignold's family had a proper operation on their minds, came certainly to recommend that this gentleman should retire. . . . They came unanimously to wish for his retirement. To say that other persons more nearly connected with him wished also for his retirement, is not, perhaps, justifiable on my part. But that his best friends did, at his time of life, in the state of his health, and under the whole circumstances of his situation, recommend that step, is quite certain. . . . Let it, however, be distinctly understood, that no accusation is made against Mr. Bignold for want of zeal ; the contrary is the case. His zeal has been excessive for the inst. He was the orig. founder of it, and of the very excellent principle so highly applauded to this day, and which I trust will yet prove so beneficial to the public by the extension of the so. As the founder and originator of the system I applaud him ; but there I must stop. I give him credit for his zeal and integrity, but I accuse him of mismanagement of late years.

This vote of a general meeting deposed Mr. Bignold, sen., from the secretaryship of the F. office. At a special general meeting of the L. So., held at Norwich, on the 9th Nov., 1818, he was by unanimous vote dismissed from the secretaryship of that asso.—one of the charges against him being that he had refused to assign over securities which had been irregularly taken in his name, whereby the bus. of the So. was impeded, and mortgagors were prevented from having their estates disincumbered.

After his dismissal from office, Mr. Bignold, sen., filed a bill in Chancery against his sons and the then committee of management of the L. So. for an account, claiming a large sum to be due to him for per-centages, and charging the defendants with a combination and a confederacy to deprive him of his office. He stated in the bill, that before the appearance of the adv. of the meeting at which he was dismissed from office, his two sons, Thomas and Samuel, met him in Lond., and in the presence of a gentleman, whom he named, offered to give him out of the funds of the L. office £10,000, and to settle upon him £500 a year during life, if he would retire. The directors said, in their answer, that so far from there being anything due to Mr. Bignold, sen., they believed he was indebted to the two offices at least £40,000. So far as the above-mentioned annu. was concerned, it transpired that the sons intended to pay it out of their own pockets—and did afterwards pay him such an annu.—but of £1000 instead of £500. This was by way of compromise of the suit. All questions of account were at the same time settled.

In 1819 Mr. Bignold, sen., founded the *National Union Fire Asso.* The D. of sett. was dated March, 1819, and by its 24th art. it was recited, that Mr. Bignold was the projector and founder of the so. ; that he had been at great expense in bringing it to maturity ; and that it was likely to derive great advantage from his knowledge and experience, and that he had agreed and did thereby agree, for the space of 3 years, to advance £10,000 to answer any immediate calls, and also, while entitled to the allowance thereafter mentioned, to pay the rent and taxes, and other contingent expenses of the houses and offices used for conducting the bus., and to provide a sec., clerks, and servants, who were to be approved of by them. In consideration of which, it was agreed that Mr. Bignold should be entitled for his life to receive and take £10 p.c. upon the prems. when they should amount to £30,000 p.a. ; £5 p.c. upon the next £20,000 ; and £2 10s. p.c. upon all further prems. over and above the expenses of conducting the office, to be paid by him as aforesaid ; he was also to have a power of appointing by deed or will, an allowance of £7 10s. p.c. upon the prems. for a term of 14 years from his death, and if he made no appointment, that allowance was to be paid to his next-of-kin. The deed was only executed by 5 or 6 persons ; but it appeared that the pol. contained a clause by which the persons accepting them bound themselves to the performance of the covenants and articles in the deed. About 2000 ins. had been effected in this manner, making the parties ins. members of the so.

Out of Mr. Bignold's connexion with the last-named Co. arose the suit of *Ellison v. Bignold*, which came before the Court of Chancery in 1821. The following were the facts : A bill had been filed by ten of the directors of the *National Union Fire*, on behalf of themselves and the other members, against Mr. Bignold, and another person, also directors of the same so. The bill imputed several acts of misconduct to the defendant Bignold, to whom the management of the bus. had been principally confided, and prayed an account and injunction against him ; and an injunction was obtained by motion *ex parte*, to restrain him from receiving money on account of the so., from acting or intermeddling in its bus., and from destroying or obliterating the books, papers, and documents belonging to it, in his possession. On a motion to dissolve the injunction, the Lord Chancellor so

decreed, on the ground of the directors not having made use of the powers of regulating the affairs of the so. given them by the deed. He said, in effect, "If they do not avail themselves of these powers, then comes the question whether Bignold has not as much right as they to keep the books, so long as they do not appoint a proper hand to hold them." The Co. lingered but a few more years, and then died. We hear no more of Mr. Bignold.

BIGOUSE, THE COUNT L. M. DE, for several years Man. for the *European*, in France. He died in 1871.

BILATERAL CONTRACT.—A contract in which both the contracting parties are bound to fulfil obligations reciprocally towards each other; as a contract of sale, where one becomes bound to deliver the thing sold, and the other to pay the price of it.—*Civil Law*.

BILBOA, INS. ORDINANCES OF.—The first Marine Ordin. of Bilboa was promulgated in 1560; and its leading features will be found embodied in the Ordin. of 1738. In 1737 another Ordin. was promulgated; but as this last related almost entirely to the contract of Bottomry, we shall reserve our remarks upon it for that head. [BOTTOMRY.]

In 1738 was pub. what is generally known as the *Marine Ordin. of Bilboa*. It is a somewhat lengthy document, and is divided into two heads: (1) *Of Averages*—of which we have already spoken under AVERAGE MARITIME. (2) *Of Ins., their Pol. and the Manner of making them*, with which we propose now to deal. Under the first sec. of this division it sets forth:

I. In regard that it is customary in this commerce to make various contracts of ins. as well by sea as land, which consist in the assurers taking the risk, losses, and contingencies, in fortuitous cases on them, viz., for what regards the sea—of shipwrecks, averages, jettisons, captures of enemies, detention of princes, barratry of the master and sailors, fires, and other unfortunate accidents, that may expectedly or unexpectedly happen to the merchandize and other things, obliging the assurer or assurers to pay the assured the sums which the pol. shall express, according to and as it is disposed by the ancient Ordin. of this Consulado, confirmed by His Majesty on the 15th Dec., 1560; and for as much as experience has since then demonstrated that from not making the pol. of the said ins. in due form and perspicuity many doubts, differences, and lawsuits have arisen, to the great prejudice of merchants, which to avoid for the future, it is ordained, that the said pol. are to be made before a notary, either by the intervention of a broker between the assured and assurers, or without it, as shall seem best to them; observing that they are to contain the christian and surnames, with the places of abode of the assurer or assurers and assured; the value of the goods and things ins., whether for the proper account of the assured or by commission; the names also of the ship, captain, and master; the place or port where the goods or things ins. are to be loaded; the road or port from whence the ship is to sail; that to which she is bound for her discharge; and if she is to touch at several places, their names, or the ports she is to stop at; the date (with the day and the hour) of the pol.; from what time the risk is to begin running, and when it shall end at the port she is bound to; the sum or sums which each assurer shall take to his charge, which every one ought to express above his firm; the prem. that according to agreement is to be paid the ins., with declaration of having received it down, or in any other manner; the obligation to be given by the assurer to the assured to pay in case of misfortune all the damages that shall supervene to what he shall ins.; the term for the payment of it; and with express submission to the decree of the Consulado of this town; and to be bound, and to go by the contents of this Ordin., without making use of any pretext to submit to others of these kingdoms or foreign ones.

II. The pol. of ins. which shall be made between the parties, or by means of a broker, are to have the same force and validity as those passed before a notary by a public writing; and equal faith and credit is to be given to them, that they may be complied with, kept, and executed, although they should want some force, or instrumental clauses, which by the notaries ought to be inserted; and to avoid ignorance, and that all may know how to act in these cases, there shall be inserted at the end of this chap. two formularies of pol.; and besides there shall a number be printed of them of the same tenor, with spaces correspondent to what there may be to treat of and adjust between the parties, that they may there extend it accordingly; that every merchant may have those in his power which he shall want according to his dealings that have obtained the royal approbation of this Ordin.

Then follow several clauses providing for sets of circumstances differing from the case of ordinary ins. Next the question of over-ins. is dealt with as follows:

VII. As the making ins. for a greater sum than what each assured is concerned for in a ship may occasion great damages and inconveniences, it is ordained that henceforward no person for himself, nor in the name of another, shall get more insured than what the goods or things assured, the customs, charges till on board, and prems. of ins., shall collectively amount to, on penalty of the annulling such ins.; understanding it that the assured shall be obliged to run the risk in the whole of 10 p.c., and can only ins. the remaining 90 p.c. But in case the assurers agree that the whole shall be ins., any one may do it, expressing this circumstance in the pol., except the same assured owner shall sail with his goods in the vessel; because in this case he shall be precisely obliged to run the risk of the 10 p.c., under the said penalty of nullity.

Next follow a series of regulations regarding ins., "imaginary gains," and of "men's lives," which were not permitted; and of ins. against captivity, which was permitted; and regarding "over-ins.," and "double ins.," all of which will be noticed under their proper heads. Then the following:

XXV. Ins. may be made on ships, effects, and merchandize perished, stolen, or damaged, even after the loss, robbery, or damage; but if the ship, effects, or merchandize shall have perished, been stolen, or damaged a long time before *that* in which the ins. was made (whether by sea or land, making the account by land of a league per hour, night and day), the ins. shall be held as null, without liberty of hearing it in judgment, or admitting any proof which the assured may want to offer, that he had no advice, good or bad; unless it be expressed in the pol. that the ins. is made upon *bad* or *good* advice—for then it shall be valid, if the assurer cannot prove that the assured knew of the loss, robbery, or damage before making the ins.

XXVI. If the assurer, having advice of the arrival of the ship and goods, sign a pol., the ins. shall be null.

XXVII. When it shall be proved against the assured, that he made the assu. after having advice of the loss or damage, he shall be obliged to return to the assurer what he shall have received from him, with 50 p.c. by way of a penalty, which shall be applied to the benefit of the river's mouth. . . .

XXVIII. Every assurer, as well as the assured, ought, when they shall go to sign a pol., or to treat, and agree on the prem., to manifest to the person who shall intervene, the good or bad advices that they shall have of the ship and cargo, that they may thereout treat of an agreement for the prem.

XXIX. Whenever the assured has any advice of the ship's being forced out of her course, an average, the captain's death, or any other misfortune happening to what shall be ins., he shall communicate it to the assurer, or assurers, viz. they being of this town of *Bilboa*, immediately on his having the said advice; and being distant, he shall advise him who by their order shall have made the ins., without losing a port, that he may communicate it to the said underwriters.

Then follow a series of clauses regarding "abandonment" in the ordinary understanding of the term; with a special provision regarding what may be termed "fraudulent abandonment," which we shall speak of under head of FRAUDS.

The following is the form of pol. furnished by the Ordin. for merchandize. The form for ins. the ship being after the same model:

In the name of God, Amen. Be it known to all men, that we, the persons who at the foot of this pol. sign our names, do thereby take to our risk and adventure that which shall run on . . . bales of . . . , valued at . . . , which . . . , inhabitant of . . . , loads on the ship named . . . , whose captain or master is . . . (or any other who shall go out in her as such), which at present is riding and anchored at . . . , and, Providence permitting, is to make a voyage from it to . . . ; and we run the said risk from . . . , or from the moment and hour that the aforesaid bales and goods shall be loaden in the said ship, and all the time that they shall be in her and spend in arriving at . . . , and that if the discharge is boat, lighter, pinnace, or any other sort of vessel, until they are, God pleasing, in . . . , in good safety, without the river's mouth. And in performing the voyage the said ship may sail backwards or forwards, to the right or to the left, and touch wherever is necessary; loading and unloading according to the will and liking of the said captain, or master, without its being deemed an alteration of the voyage. And the said risk we take is of the sea, winds, friends, or enemies, fire, barratry of the master, and detention of Kings, Princes, and States; and the damages, losses, or wastes, which the said goods shall receive at sea, by the aforesaid or by any other danger, or hazard they run; we take them on us to pay them to the said . . . , and to him that shall have his power, proportionably, without attending among ourselves to being the first or last, for to pay them to the said . . . , or to whom shall have his right, every one of us in the sum which each of us shall express at the foot of this pol. and no more, with the condition that the said goods being put in safety in the place of . . . , without the river's mouth, it be acknowledged that we have complied with our obligation; and *this* to be in itself null and of no value or effect; and if (which God forbid) by a storm, and with the opinion of the pilots, mariners, and passengers, to save the lives or to ransom them, or for any other common benefit, it shall be expedient to lighten the ship, let it be done, without waiting for our consent; or let them carry the goods to the most convenient port, and there sell them by judicial authority, and we will pay the costs and charges which they shall occasion, although there be no proof nor testimony; for we *will*, that the charges, damage, and waste, which from thence shall occur to the said goods, rest upon the oath of the said captain or master, or of the assured and his representative; and in these and other cases in which the damage and loss of said goods appears, we oblige ourselves, on the same time of this ins. expiring, to the payment of the sum that it shall import, distinguished in the oath of the said . . . , the assured, or of him that shall have his power, without admitting any exception, although we have it lawfully and of right; because we make this pol. at all our risk, hazard, and adventure; and with all the conditions, strength, and firmness, contained in the Ordin. lastly made by the University and House *de Contratacion* of this town of *Bilboa*, with its *Consulado*, which is confirmed by His Majesty (whom God preserve); all which we acknowledge as if inserted verbatim, and we confess to have seen and understood it. This for as much as there is to be paid us in ready money [or there has been paid us] . . . which corresponds to . . . per cent. as a prem. for this ins., which is made in . . . [name, place, day, hour, month, and year].

The pol. was signed at foot by the underwriters, each of whom appears to have subscribed a sort of sub-contract as follows:

I . . . , inhabitant of . . . , one of those contained in the above pol., am content to run the risk in the aforesaid ship, named . . . for the goods which the said . . . shall, or has loaded in her, in the voyage from . . . , for . . . of money, which I am to pay if lost by the causes and according to and as is expressed in the said pol.; and for it I declare to have received from the said . . . the sum of . . . for prem. at . . . p. c. from his hand, or by that of . . . , an exchange and bill broker of this said town, and I have signed it in [state day, month, and year].

Another covenant was sometimes entered into in this form:

And the assured must give us security to our satisfaction that he will be obliged to abide by the sentence which shall be imposed, if the case shall arise, that we should pay some losses or damages on the merchandize that we ins., and should afterwards prove that it was unjustly recovered; that in such case he restore and pay it.

That if by this ins., we shall owe some dues, averages, and expenses, and they shall not be asked of us in the time appointed in the said new Ordin. of the House *de Contratacion* and *Consulado* of this town, the said . . . must lose his right to demand them of us, and we are to remain free from this obligation.

And on executing the pol. before the notary with the above and any other special conditions inserted, there was added the following:

And to the performance and payment of what is said we oblige ourselves with our persons and goods that we possess and may acquire; and we give power to His Majesty's Justices, and especially and expressly to the Tribunal and Court of Messieurs the Prior and Consuls of the University and House *de Contratacion* of this said town, to whose jurisdiction we submit; and renounce our habitation that we have and may gain anew, and the law *Si convenerit de Jurisdictione omnium judicum*; and the last *Pragmatica* of the submissions, and the laws besides in our favour and the general; that the said tribunal, and no other court whatever, may compel us as by a sentence passed authoritatively in a thing determined, and consented to by us; and we so execute it before the present notary, in this said town of *Bilboa* [state day, month, and year, with the hour], witnesses and testimony of being known.

This Ordin., which applied more particularly to the ports of Spain bordering on the Atlantic, was again ratified in 1774. It was further revised and ratified in 1819, and may now be regarded in a great measure as the Maritime or Ins. Ordin. of Spain.

BILGE WATER.—The water that collects in the bottom of a ship by leakage or otherwise. When a ship is tight, the bilge water pumped up is dark ; in a leaky ship, clear. It has usually a peculiar and offensive smell.

BILGED.—In nautical phrase having the bottom of a ship stove in. The lower or flat part of the bottom of a ship on which she rests when aground is called the “bilge” of a ship. The word is prob. connected with “bulge.”

BILIOUS (bilis, *bile*).—A term employed to characterize a class of diseases caused by a too copious secretion of bile. *Biliary concretions.*—Concretions occurring in some part of the biliary apparatus, comprising all the parts concerned in the secretion and concretion of the bile.—*Hoblyn.*

BILLINGSLEY, MR. CASE, was the acting partner in the firm of Bradley and Billingsley, Solicitors, Mercers Hall, for several years preceding 1720 ; and his name frequently occurs in connexion with the various applications for charters to carry on marine and other branches of ins. [ANNU. ON LIVES.] [LIFE INS., HIST. OF] [MARINE INS., HIST. OF.]

BILLINGSLEY'S INSURANCE.—An account of this project, set on foot in 1716, will be found under MARINE INS., HIST. OF.

BILL OF EXCHANGE.—An instrument (generally on a long and narrow slip of paper), which contains an order of payment on a debtor at a distance from his creditor, and which may thus become a means for liquidating transactions by transference to some third party, without the actual conveyance of specie. Bills of exchange are generally stated to have been invented by the Jews of Lombardy concurrently with marine ins. There can be no doubt that the same development of commerce which rendered bills of exchange a desirable medium of payment for merchandize transmitted from a distance, rendered marine ins. also a necessity as a means of maintaining the credit of the merchant in the event of maritime disaster. That prob. is the extent of the connexion.

Beckmann (*Hist. of Inventions*) says the first bills of exchange are mentioned by the jurist Baldus, and bore date A.D. 1328 ; but that they were not in common use until the following century.

A bill of exchange is assignable at Common Law by mere indorsement, so that very many names are frequently attached to one bill, and each, any, or all of them may be sued upon the bill if it be not paid in due time. The person who makes or draws the bill is technically called the *drawer* ; he to whom it is addressed is before acceptance the *drawee*, and after acceptance the *acceptor* ; the person in whose favour it is drawn is the *payee* or *holder* ; if he indorse the bill to another, he is called the *indorser* ; and the person to whom it is thus assigned or negotiated is the *indorsee* or *holder* ; and so on *ad infinitum*.

In 1833, by 3 & 4 Wm. IV. c. 98, s. 7, bills of exchange and promissory notes having not more than *three* months to run were declared to be not subject to the Usury Laws. In 1837, by 7 Geo. IV. c. 80, this exemption was extended to bills, etc., at or within 12 months. On the abolition of the Usury Laws, all these distinctions were happily swept away. Bills of exchange drawn or negotiated in Great Britain are subject to the Stamp Laws ; as also are foreign bills negotiated here.

BILL OF GROSS ADVENTURE.—an instrument in writing which contains a contract of *bottomry respondentia*, and every species of maritime loan.—*French Law.*

BILL OF HEALTH.—A certificate or instrument signed by Consuls or other proper authorities, delivered to the masters of ships at the time of their clearing out from all ports or places suspected of being particularly subject to infectious disorders, certifying the state of health at the time such ship sailed. A *clean* bill imports that at the time the ship sailed no infectious disorder was known to exist. A *suspected* bill, commonly called a *touched* patent or bill, imports that there were rumours of an infectious disorder, but that it had not actually appeared. A *foul* bill, or the absence of clean bills, imports that the place was infected when the vessel sailed.—*McCulloch's Com. Dic.* Bills of health were issued in Italy as early as 1527.

BILL OF LADING.—A memorandum signed by masters of ships, in their capacity of carriers, acknowledging the receipt of merchants' goods, of which there are usually *three* parts—one kept by the consignor, one sent to the consignee, and one preserved by the master. It is the evidence of the title of the goods shipped, and by its indorsement and delivery the transfer of the property in the goods specified therein is generally effected.

And the bills of lading do declare what goods are laden, and bindeth the master to deliver them well conditioned to the place of discharge, according to the contents of the charter-party ; binding himself, his ship, tackle, and furniture of it, for the performance thereof. Of these bills of lading, there is commonly three bills of one tenor made of the whole ship's lading, or of many particular parcels of goods, if there be many laders ; and the marks of the goods must therein be expressed, and of whom received, and to whom to be delivered. These bills of lading are commonly to be had in print in all places, and several languages. One of them is inclosed in the letters written by the same ship, another bill is sent overland to the factor or party to whom the goods are consigned, the third remaineth with the merchant, for his testimony against the master, if there were any occasion or loose dealing ; but especially it is kept for to serve in case of loss, to recover the value of the goods of the assurers that have undertaken to bear the adventure with you.—*Malynes, 1755.*

Bills of lading thus have a very intimate bearing upon marine ins. We have not been able to trace the origin of these instruments. The earliest one we have met with was in Philadelphia a few years since. It bears date 1711. We place by the side of it a bill as now in use :

Shipped, by the grace of God, in good order, and well-conditioned, by *Pentecost Teague*, . . . in and upon the good sloop called the *St. James*, whereof is master under God for this present voyage *William Wade*, and now riding at anchor in the port *Philadelphia*, and, by God's grace, bound for *Carosoe*; to say *sixteene half barrells of flower, three terces of bread, two boxes of candles, on y^e proper account and risk of said Pentecost Teague, and goes consigned to said William Wade*, marked and numbered as in the margin, and are to be delivered in the like good order and well-conditioned at the aforesaid port of *Carosoe* (the danger of the seas only excepted), unto said *William Wade*, or to his assigns, he or they paying freight for the said goods *eight pounds per tun*, with primage and average accustomed. In witness whereof, the master or purser of the said ship hath affirmed to three bills of lading all of this tenor and date, the one of which three bills being accomplished, the other two to stand void.

Shipped, in good order, and well-conditioned, by . . . , in and upon the good ship called the . . . , whereof is master for this present voyage, . . . , and now riding at anchor in this port, and bound for . . . [Specify goods.] being marked and numbered as in the margin, and are to be delivered in the like good order and well-conditioned, at the aforesaid port of . . . (the act of God, the Queen's enemies, fire, all and every dangers and accidents of the seas, rivers, and navigation, of whatever nature or kind soever, excepted) unto . . . , or to . . . assigns, he or they paying freight for the said goods, with primage and average accustomed. In witness whereof, the master or purser of the said ship hath affirmed to . . . bills of lading, all of this tenor and date, the one of which bills being accomplished, the others to stand void.

Dated, in . . . , the . . . , 18 .

[Signature.]

And so God send the good ship to her desired port in safety. Amen. Dated, in Philadelphia, y^e 18th 2nd m^o. 1711. (Signed), William Wade.

By 18 & 19 Vict. c. 111 (1855), the rights of suit under a bill of lading vest in the consignee or indorsee, without prejudice to any right of stoppage *in transitu* or of freight.

By the 23 & 24 Vict. c. 22 (1860), s. 21, a bill of lading becomes the entry or shipping-bill of goods exported.

BILLS OF MORTALITY.—B. of mort. are abstracts from parish registers, showing, as their name imports, the numbers that have died in any parish or place during certain periods of time, as in each week, month, or year; and are accordingly denominated weekly, monthly, or yearly bills. They sometimes include the numbers of the baptisms during the same periods, and generally (in later times) those of the marriages.

The hist. of B. of mort. occupies an important place in the development of the science of life contin. Each successive step in this direction may be said to have been either dependent upon, or to have led to, improvements in the early bills. It seems hardly too much to say that if there had been no B. of mort. there would have been no T. of mort., and hence no life ins. conducted on exact scientific principles.

The B. of mort. have been used in various ways, and for various purposes. Sydenham, it is evident, had the Lond. bills before him in writing his imperishable commentaries. Arbuthnot used them in an argument on Divine Providence, and in the interests of morality. He shows from these bills that males always exceed females in the yearly births, but that external accidents make great havoc among males. He concludes, therefore, that polygamy is contrary to the law of nature and justice. Heberden, in a masterly paper, illustrated the use of the weekly obs., and deduced from them an important law, *the Influence of Cold upon Health*. Simpson and Price constructed life T. from the Lond. bills.—*Dr. Farr, 27th Report of R. G.*

Rome had its B. of mort. (*Rationes Libitinae*), which were kept in the Temple of Libitina, the Goddess of Funerals. Her officers were the Libitinarii, *our* undertakers. Her temple—in which all the business connected with the last rites was transacted—served the purpose of a regis. office. At this temple an account (*ratio, ephemeris*) was kept of those who died; and a small sum was paid for the regis. of their names.—*Smith's Dict. of Greek and Roman Antiquities.*

We have it on the authority of Dr. Short, that B. of mort. were kept in some of the country parishes of England as early as 1538; and indeed he gives the bills for Worksop (Notts) and Melton-on-Hill (Yorkshire) for that year. He did not find any at an earlier date, although he entered upon a most painstaking inquiry for the purpose. [DRATH, CAUSES OF.] [PARISH REGISTERS.]

It is generally stated by writers upon the subject that the first B. of mort. for the city of Lond. was pub. at the close of 1592; but it is now known that a bill was pub. at least 30 years earlier, viz., in 1562, in support of which position we here quote the following interesting passage from Maitland :

As neither the parish clerks' account nor that pub. by Mr. Graunt take any notice of the first B. of

mort. pub. in this city for the year 1562, nor of those for the years 1593 and 1603, I shall supply these defects from the great and valuable library of Sir Hans Sloane, Bart., which, by the vast number of its books and generosity of its owner, is rendered as useful as any of the publick libraries within the city or suburbs of Lond. In the year 1562 a grievous pestilence raged in this city; therefore, in order to know the increase and decrease of the same, 'twas judg'd necessary to take an account of the number of burials, which being the first of the kind that was ever taken in Lond., it commenced on the 1st Jan., 1562, and ended the last of Dec., whereby it appears that the total number buried within the city and suburbs in that year amounted to 23,630, whereof of the plague, 20,136.—*Hist. of Lond.*

Here is an extract from the bill so referred to as given by Stow:—

Buried in <i>London</i> , and the places near adjoining, from the 1st. of Jan. 1562, to	}	23,630
the 1st of Jan. 1563, in the whole number		
Whereof of the plague		20,136
The true number of all that were buried within the Citie and Liberties		20,414
The true number of all that were buried in places near adjoining to the Citie	}	3216
and without the Liberties		

Then follows the numbers who died in each parish, making up the above totals.

There is now in good preservation at the Hall of the Parish Clerks a printed B. of Mort. for the year 1582, as follows:—*The number of all those that hath dyed in the Citie of London, & the liberties of the same, from the 28 of December, 1581, unto the 27 of December 1582, with the Christenings; and also the number of all those that have dyed of the plague of eury parish particularly.—Renela. 14 chap. Blessed are the deade that die in the Lorde, even so sayth the Spirite, for they rest from their labours.*

There is deade this yeere, that is to say, fro. the 28 of December	}	vi. MD. cccc. xxx
1581 unto the 27 of December 1582 within the citie and the		
liberties of the same		
Of the plague		iii. M. lxxv.
Christened		iii. MDiii
Parishes clear of the plague		v.
Out-parishes		ccccxxx.
Of the plague		ccxxxix

Here followeth the parishes with their numbers, that hath been buried of the plague. [Making up the above totals.]

In 1592, the plague again appearing in Lond., the *Fraternity of St. Nicholas* instituted and provided a weekly account of the burials, which at the end of the year—Dec. 21, 1592, to Dec. 21, 1593—were announced as amounting to 17,844; “whereof have died of the plague, 10,662; christened this year, 4021; parishes clear of the plague, none.”—*Parish Clerks' Register.*

The following is a copy of a bill, given from March to Dec. of the same year [1592] by the author of the *Four Great Plagues*, pub. in 1665:

	Deaths.	Plague.		Deaths.	Plague.		Deaths.	Plague.
March 17	230	3	June 23	410	108	Sept. 29	450	330
24	251	31	30	850	118	Oct. 6	408	327
31	219	29	July 7	1440	927	13	422	323
April 7	307	27	14	1510	893	20	330	308
14	203	33	21	1491	671	27	320	302
21	290	37	28	1507	852	Nov. 3	310	301
28	310	41	Aug. 4	1503	983	10	309	209
May 5	250	29	11	1550	797	17	301	107
12	339	38	18	1532	651	24	321	93
19	300	42	25	1508	449	Dec. 1	349	94
26	450	58	Sept. 1	1490	507	8	331	66
June 2	410	62	8	1210	563	15	329	71
9	441	81	15	621	455	22	386	39
16	399	99	22	629	349			

The total of all the burials of the time above said 25,886

Whereof of the plague 11,503

This is the bill which is generally, but as we have seen erroneously, spoken of as the “first Lond. B. of Mort.”

The first occasion of the weekly bills being issued to the public was in 1594. The charge for them was 4s. p.a. Dr. Farr speaks of it as a part of the general measures of the able Gov. of Queen Elizabeth that “abstracts of burials, baptisms, and marriages, were directed to be compiled in each parish; and persons were appointed to view the bodies of all that died before they were suffered to be buried, and to certify of what prob. disease each individual died, in statements of which it was the duty of the minister to make a weekly return.” In this way we may account for the bills being found to exist in places which are now regarded as obscure. [PAROCHIAL REGISTRATION.]

The plague still continuing, weekly accounts of burials were issued to 18th Dec. 1595, when the practice was again abandoned, the plague having subsided in the course of the year.

Old Stow, in his *Survey of Lond.*, first pub. 1598, says :

To know how the City stands in regard of the health and sickness of the inhabitants, the weekly B. of mort. were appointed long ago, carefully and wisely. That so if any infectious disease were found to reign, means might be used for the stopping it, and preventing the deaths of innumerable citizens. Hereby also are many other advantages gained, as to know the populousness of the City, nay, of the whole kingdom, as some ingenious men that have made observations on these bills have discovered.

It may be noted here that these early bills included but 109 parishes, which parishes were all alphabetically arranged, and no distinction was made between the out-parishes and those within the walls. At a later date (1665) this was rectified.

In 1603, the plague re-appearing, the B. of mort. were resumed, and were thenceforth continued uninterruptedly, without being merely dependent upon plague visitations. They were commonly examined as matters of curiosity, or were consulted by the heads of families anxious to ascertain the healthiness of the City before repairing to it, or selecting it as a place of abode. Thus Lord Salisbury, writing to Prince Henry, the son of James I., says, "Be wary of Londoners, for there died here 123 last week."

Copies of the orig. bills for 1602, 1603, and 1604, are now existing in the library of the Corp. of Lond. By the bill commencing 17th Dec., 1602, and ending Dec., 1603, the total deaths regis. were 42,042, whereof of the plague, 36,269. Another bill for the same year gives the figures respectively as 37,294 and 30,561; but we believe this only extended from March to Dec. The entire area included in the bills up to this date was 1853 acres. Between 1604 and 1606 the area was much extended; and then included 97 parishes within the walls, 16 parishes without the walls, and 6 contiguous out-parishes in Middlesex and Surrey.

It is evident from the foregoing that the existence of the plague conferred upon the B. of mort. their chief value and interest. The Lord Mayor every week transmitted a copy to the Court. The bills of the Co. of Parish Clerks were then professedly made to the "Queen's Most Excellent Majesty, and the Right Hon. the Lord Mayor."

Here is a copy of the bill for the year 1606 :

The whole Year's Collection of all the Burials and Ohristenings, as well within the Cittie of Lond. and the Liberties thereof, and the Pesthouse: As also in the 9 Out-Parishes, adjoyning to the Citie, and out of the Freedom, from Thursday the Nineteenth of December Anno Domini 1605, to Thursday, the Five-and-Twentieth of December Anno Domini 1606, according to the report made to the King's Most Excellent Majestie, by the Co. of the Parish Clerks of Lond.

Buried this year in the four score and sixteene parishes of <i>Lond.</i> within the walls	2643
Whereof of the plague	72
Buried this year in the sixteene parishes of <i>Lond.</i> within the Liberties and without the walls, } as also in the <i>Pesthouse</i> adjoyning to <i>Lond.</i>	3998
Whereof of the plague	1078
The whole summe of all the burials in <i>Lond.</i> and the Liberties thereof, together with the } <i>Pesthouse</i> , this year is	6641
Whereof of the plague	1780
Buried this year in the nine out-parishes in <i>Middlesex</i> and <i>Surrey</i>	1279
Whereof of the plague	344
The total of all the burials in the places aforesaid is	7920
Whereof of the plague	2124
Christened in the foresaid places this year	6614
Parishes that haue been cleare this year	17
Parishes that haue been infected this year	104

It seems necessary to warn readers of these early bills not to interpret the term "christened" as synonymous with "born." The former merely represented such a proportion of births as were regis. in connexion with the rites of the Estab. Church. This obs. appears necessary, lest it might be supposed that, as the number specified in the bills as buried exceeded the number christened, the City was gradually being depopulated—an inference which misled several authors at a subsequent period.—*Farren*. The regis. christenings were deficient, because (1) theological opinions were entertained by some unfavourable to the baptismal rite; (2) there were occasionally religious scruples on the part of the Christian ministers regarding the worthiness of parents to have their children baptized; and (3)—what prob. formed the chief difficulty—*there was a small fee for regis.*—*Graunt*.

In 1611 the Fraternity of St. Nicholas procured a Charter from James I., incorp. them as the *Co. of Parish Clerks*; and they were formally entrusted with the future regulation and issue of the *Lond.* bills, which they had superintended since 1592. The Fraternity of St. Nicholas had been incorp. as early as 1233 by Charter, 17 Hen. III.

The following is a copy of the bill issued at the close of 1624; but headed "1623" and "1624," prob. from a part of the former year being included in it :

The General Bill for the whole year of all the *Burials* and *Christenings*, as well within the City of *Lond.*, and the Liberties thereof, as in the nine out-parishes adjoyning to the City, with the *Pesthouse* belonging to the same: from Thursday the 18th of Dec., 1623, to Thursday the 16th Dec., 1624, according to the report made to the King's Most Excellent Majesty by the Co. of Parish Clerks of *Lond.*

Buried this year in the fourscore and seventeen parishes of <i>Lond.</i> within the walls	3386
Whereof of the <i>plague</i>	1
Buried this year in the sixteen parishes of <i>Lond.</i> and the <i>Pesthouse</i> , being within the Liberties, } and without the walls	5934
Whereof of the <i>plague</i>	5

The whole sum of all the burials in Lond. and the Liberties thereof in this year...	9310
Whereof of the <i>plague</i> ...	6
Buried of the <i>plague</i> , without the Liberties in <i>Middlesex</i> and <i>Surrey</i> , this whole year ...	0
Christened in Lond. and the Liberties thereof this year ...	6368
Buried this year in the nine out-parishes adjoining to Lond. and out of the Freedom ...	2900
Whereof of the <i>plague</i> ...	5
The total of all the burials in the places aforesaid is ...	12,210
Whereof of the <i>plague</i> ...	11
Christened in all the aforesaid places this year...	8299
Parishes clear of the <i>plague</i> ...	116
Parishes that have been infected this year ...	6

In 1625, being a plague year, every parish was particularized—as we have seen was the case in 1562. This was called a “Great Bill,” and was in the following form :

1624-1625. A general, or great bill for this year of the whole number of burials, which have been buried of all Diseases, and also of the Plague, in every Parish within the City of Lond. and the Liberties thereof; as also in the nine out-parishes adjoining the said City, with the Pesthouse belonging to the same, from Thursday the 16th day of Dec., 1624, to Thursday the 15th day of Dec., 1625, according to the report made to the King's Most Excellent Majesty by the Co. of Parish Clerks of Lond.

	Bur.	Plag.		Bur.	Plag.
Albanes in Woodstreet ...	188	78	Margarets Moses ...	37	25
Alhallows, Barking ...	397	263	Margarets New Fish street ...	123	82
Alhallows, Breadstreet ...	34	14	Margarets Pattons ...	77	50
Alhallows the Great ...	442	302	Mary Ab-church ...	98	58
Alhallows Hony-lane ...	18	8	Mary Aldermanbury ...	126	79
Alhallows the Less ...	259	205	Mary Aldermay ...	92	54
Alhallows in Lombard St. ...	86	44	Mary le Bow ...	35	19
Alhallows Stainings ...	183	138	Mary Bothaw ...	22	14
Alhallows the Wall ...	310	155	Mary Coal-church ...	26	11
Alphage Cripple-gate ...	240	190	Mary at the Hill ...	151	84
Andrew-Hubbard ...	146	101	Mary Mounthaw ...	76	58
Andrews Undershaft ...	219	149	Mary Sommerset ...	270	192
Andrews by Wardrobe ...	373	191	Mary Stainings ...	70	44
Anns at Aldergate ...	196	128	Mary Woolchurch ...	58	35
Anns Black-Friers ...	336	215	Mary Woolnoth ...	82	50
Antholins Parish ...	62	31	Martins Ironmonger lane... ..	25	18
Austins Parish ...	72	40	Martins at Ludgate... ..	254	164
Bartholomew at the Exchange ...	52	24	Martins Orgars ...	88	47
Bennets Fink... ..	108	57	Martins Outwich ...	60	30
Bennets Grace-Church ...	48	14	Martins in the Vintry ...	339	208
Bennets at Pauls Wharf ...	226	131	Matthew Friday-street ...	24	11
Bennets-Shearhog ...	24	8	Maudlins in Milk-st. ...	401	23
Botolphs Billings-gate ...	99	66	Maudlins Old Fish-st. ...	225	142
Christ's-Church Parish ...	611	371	Michael Bassishaw... ..	199	139
Christophers Parish ...	48	28	Michael Corn Hill ...	159	79
Clements by Eastcheap ...	87	72	Michael Crooked Lane ...	144	91
Dionys Back-church ...	99	59	Michael Queen 1th ...	215	157
Dunstans in the East ...	335	225	Michael in the Quern ...	53	30
Edmunds Lumbard-street ..	78	49	Michael in the Royal ...	111	61
Ethelborow in Bishops-gate ...	205	101	Michael in Wood-st. ...	189	68
St. Faiths ...	89	45	Mildreds Bred-st. ...	60	44
St. Fosters in Foster Lane ...	149	102	Mildreds Poultreay ...	94	45
Gabriel Fen-Church ...	71	54	Nicholas Acons ...	33	13
Georges Botolphs-lane ...	30	19	Nicholas Coal Abby ...	87	67
Gregories by Pauls ...	296	196	Nicholas Olaves ...	70	43
Hellens in Bishops-gate St. ...	136	71	Olaves in Hart-st. ..	266	195
James by Garlick-hith ...	180	109	Olaves in the Jewry... ..	43	25
John Baptist ...	122	79	Olaves in Silver-st. ..	174	103
John Evangelist ...	7	0	Pancras by Soper-lane ...	17	8
John Zacharies ...	143	97	Peters in Cheap ...	68	44
James Dukes-place ...	310	154	Peters in Corn-hill ...	318	78
Katherine, Coleman-st. ...	260	175	Peters in Pauls Wharf ...	97	68
Katherine Cree-Church ...	886	373	Peters Poor in Broad-street ...	52	27
Lawrence in the Jewrie ...	91	55	Stevens in Coalman-street ...	506	350
Lawrence Pountney ...	206	127	Stevens in Walbrook ...	25	13
Leonards Eastcheap ...	55	26	Sw thin at London-stone ...	99	60
Leonards Foster-lane ...	292	109	Thomas Apostles ...	141	107
Magnus Parish by the Bridge ...	137	85	Trinity Parish ...	148	87
Margarets Lothbury ...	114	64			

Burials within the 97 Parishes within the Walls, of all Diseases ... 14340
Whereof of the Plague... ... 9197

Andrews in Holborn ...	2190	1636	Georges Southwark ...	1608	912
Bartholomew the Great ...	516	360	Giles Cripplegate ...	3988	2338
Bartholomew the Less ...	111	65	Olaves in Southwark ...	3689	2609
Brides Parish... ..	1481	1031	Saviours in Southwark ...	2746	1671
Botolph Algate ...	2573	1653	Sepulcheres Parish ...	3425	2420
Bridewell Precinct ...	213	152	Thomas in Southwark ...	335	277
Botolphs Bishops-gate ...	2334	714	Trinity in the Minories ...	131	87
Botolphs Alders-gate ...	587	307	At the Pest-house ...	194	189
Dunstones the West ...	860	642			

Buried in the 16 Parishes without the walls, standing part within the Liberties and part without ; in Middlesex and Surrey and at the Pest House ... 26972
Whereof of the Plague ... 17153

Clements Temple Bar ...	1284	755	Martins in the Fields ...	1470	973
Giles in the Fields ...	1333	947	Mary White Chapel ...	3305	2272
James at Clarken-well ...	1191	903	Magdalens Bermondsey ...	1127	889
Katherins by the Tower ...	998	744	Savoy Parish.. ...	250	176
Leonards in Shoreditch ...	1995	1407			

<i>Buried in the nine out-parishes in Middlesex and Surrey</i>	... ..	12953
<i>Whereof of the Plague</i>	... ..	9067
<i>The total of all the Burials of all diseases within the walls, without the walls in the Liberties, in Middlesex and Surrey; with the nine out-parishes and the Pest-house</i>	... ..	54265
<i>Whereof Buried of the Plague this present year, is</i>	... ..	35417
<i>Christenings this present year, is</i>	... ..	6983
<i>Parishes clear this year, is</i>	... ..	1
<i>Parishes infected this year, is</i>	... ..	121

The figures, we observe, do not cast exactly, but that is no fault of ours.

It was during this year, 1625, that, in consequence of the B. of mort. having acquired a general reputation, the Co. of Parish Clerks obtained a decree, or Act, under the seal of the High Commission Court, or Star-Chamber, for the keeping of a printing-press in their hall, in order to the printing of the weekly and general bills within the City and Liberties thereof; for which purpose a printer was assigned by the Archbishop of Canterbury. And on the 18th July in that year a printing-press was accordingly set up, and an order then made that from thenceforth the weekly reports of the burials, within the limits aforesaid, should be printed, with the number of burials against every parish, which till that time had not been done. In 1626 the returns of the City of Westminster and one or two other parishes were included in the bills, extending their total area to 5875 acres.

In 1629 an account of the *diseases and casualties* causing death was for the first time added, although such details had been returned to the Co. since 1604, or, according to Graunt, from 1592. It probably appeared doubtful whether such distinctions would be generally tolerated, and accordingly, on their first promulgation in this year, it was deemed politic to issue two sets of bills, one with, the other without, such additions. We shall give a copy of this bill so far as the causes of death were concerned under DEATH, CAUSES OF.

The duplicature was afterwards discontinued, and the weekly bills, thus stating the number of burials [males and females separately given also for the first time], christenings, and nature of diseases, without however any distinction as to ages, continued unaltered for many years, unless, on some special occasions, the plague or other circumstance had directed public attention to the subject.—*Farren*.

In 1636 the parishes of Hackney, Islington, Lambeth, Newington, Rotherhithe, Stepney, Poplar, Bethnal Green, etc., brought in their reports of the christenings, burials, and plague in like manner and form as the City and Westminster had done before. The area covered by the bills was thus increased in extent about four-fold—covering 22,538 acres.

Graunt especially warns us that, from the year 1642 forwards, the account of the christenings is not to be trusted, the neglects of the same beginning about that year; for in 1642 there are set down 10,370, and about the same number several years before, after which time the said christenings decreased to between 5000 and 6000, by omission of the greater part.

In 1660 the bills were newly modelled, and the *causes of death* in the whole 130 parishes were brought in. The 12 parishes in Middlesex and Surrey were made a division by themselves; and the 5 parishes within the City and Liberties of Westminster were also made a division, whereas before they were intermixed with each other; and from henceforth one weekly bill only was issued, and one ann. bill.

In 1661 Captain John Graunt pub. *Natural and Political Observations mentioned in a following Index, and made upon the Bills of Mort*. The writer says, in his "Epistle Dedicatory":

Now having (I know not by what accident) engaged my thoughts upon the Bills of Mort., and so far succeeded therein as to have reduced several great confused vols. into a few perspicuous tables, and abridged such obs. as naturally followed from them into a few succinct paragraphs, without any long series of *multiloquious deductions*, I have presumed to sacrifice these my small but first publish'd labours unto your Lordship, as unto whose benign acceptance of some other of my papers, even the birth of these is due; hoping (if I may without vanity say it) they may be of as much use to persons in your Lordship's place, as they are of little or none to me, which is no more than the fairest diamonds are to the journeyman jeweller that works them, or the poor labourer that first dig'd them from the earth.

Next we reach the "Preface," wherein he tells us how he came to take an interest in the subject:

Having been born and bred in the City of London, and having always observed that most of them who constantly took in the the weekly B. of mort. made little other use of them than to look at the foot how the burials increased or decreased, and among the casualties what had happened, rare and extraordinary, in the week current; so as they might take the same as a text to talk upon in the next company, and withal in the plague time, how the sickness increased or decreased, that the rich might judge of the necessity of their removal, and tradesmen might conjecture what doings they were likely to have in their respective dealings;

Now I thought that the wisdom of our City had certainly designed the laudable practice of taking and distributing these accompts for other and greater uses than those above mentioned, or, at least, that some other uses might be made of them; and thereupon I, casting mine eye upon so many of the general Bills as came to hand, I find encouragement from them to look out all the Bills I could, and (to be short) to furnish myself with as much matter of that kind even as the Hall of the Parish Clerks could afford me; the which when I had reduced into tables (the copies whereof are here inserted) so as to have a view of the whole together, in order to the more ready comparing of one year, season, parish, or other division of the City, with another, in respect of all burials and christenings, and of all

the diseases and casualties happening in each of them respectively; I did then begin not onely to examine the conceits, opinions, and conjectures which upon view of a few scattered Bills I had taken up, but did also admit new ones, as I found reason and occasion from my tables.

Moreover, finding some truths and not-commonly-believed opinions to arise from my meditations upon these neglected papers, I proceeded further to consider what benefit the knowledge of the same would bring to the world, that I might not engage myself in idle and useless speculations; but like those noble *virtuosi* of Gresham College [the Royal Soc. held its sittings there at this period]—who reduce their subtle disquisitions upon nature into downright mechanical uses—present the world with some real fruit from those ayrie blossoms.

He then enters upon a detailed hist. of the Bills, "their beginning and progress," in which we propose briefly to follow him :

1. The first of the continued weekly B. of Mort. extant at the Parish Clerks Hall begins the 29th Dec., 1603, being the first year of King James, his reign; since when a weekly accompt hath been kept there of Burials and Christenings. It is true there were bills before, viz., for the years 1592-93-94; but so interrupted since that I could not depend on the sufficiency of them, rather relying upon those accompts which have been kept since in order as to all the uses I shall make of them.

2. I believe that the rise of keeping these accompts was taken from the *Plague*; for the said bills (for ought appears) first began in the said year 1592, being a time of great mort., and after some dis-use were resumed again in the year 1603, after the great plague then happening likewise.

3. These bills were printed and pub. not onely every week on Thursdays, but also a general accompt of the whole year was given in upon the Thursday before Christmas Day. . . .

He then gives some examples of the Bills, which we shall have occasion to notice hereafter, and continues their hist. as follows :

10. We have hitherto described the several steps whereby the bills of mort. are come to their present state; we come next to show how they are made and composed, which is in this manner, viz. : When any one dies, then, either by tolling or ringing of a bell, or by bespeaking of a grave of the sexton, the same is known to the searchers corresponding with the said sexton. The searchers hereupon (who are ancient matrons sworn to their office) repair to the place where the dead corpse lies, and by view of the same, and by other inquiries, they examine by what disease or casualty the corpse died. Hereupon they make their report to the Parish Clerk, and he, every Tuesday night, carries in an accompt of all the burials and christenings happening that week to the Clerk of the Hall. On Wednesday the general accompt is made up and printed; and on Thursday published and dispersed to the several families who will pay four shillings p.a. for them.

Memorandum.—That although the general yearly bills have been set out in the several varieties aforementioned, yet the orig. entries in the *Hall-Books* were as exact in the very first as to all particulars as now; and the specifying of casualties and diseases was prob. more.

The usual *honorarium* to the searchers was *one groat*; but it has been said or insinuated by one of the early writers on the subject—we forget which—that "the mist of a glass of ale, or the bribe of a two-groat-piece," might sometimes modify the reported cause of death, where any such modification was desired.

Graunt next enters upon a series of "General Observations" on the bills, in which we can accompany him but a short distance here, although we shall have occasion to quote his quaint, but often sagacious, reasoning in other parts of this work :

In my discourse upon these bills, I shall first speak of the casualties; then give my obs. with reference to the places and parishes comprehended in the bills; and next of the years and seasons :

1. There seems to be good reason why the magistrate should himself take notice of the numbers of burials and christenings, viz., to see whether the Citie increase or decrease in people; whether it increase proportionably with the rest of the nation; whether it be grown big enough, or too big, etc. But why the same should be made known to the people, otherwise than to please them, as with a curiosity, I see not.

2. Nor could I ever yet learn (from the many I have asked, and those not of the least sagacity) to what purpose the distinction between males and females is inserted, or at all taken notice of. Or why that of marriages was not equally given in. Nor is it obvious to everybody, why the account of casualties (whereof we are now speaking) is made. The reason which seems most obvious for this latter is, that the state of health of the City may at all times appear.

3. Now it may be objected that the same depends most upon the accounts of epidemical diseases, and upon the chief of them all, the plague. Whereof the mention of the rest seems only matter of curiosity.

4. But to this we answer, that the knowledge even of the numbers which die of the plague, is not sufficiently deduced from the meer report of the searchers, which only the bills afford; but from other ratiocinations, and comparings of the plague with some other casualties.

5. For we shall make it probable that in the years of plague a quarter part more dies of that disease than are set down; the same we shall prove by other casualties. Wherefore if it be necessary to impart to the world a good account of some few casualties, which since it cannot well be done without giving an account of them all, then is our common practice of so doing very apt and rational.

6. Now to make these corrections upon the perhaps ignorant and careless searchers reports, I considered first of what authority they were of themselves, that is, whether any credit at all were to be given to their distinguishments; and finding that many of the casualties were but matter of sense, as whether a child were abortive or still-born; whether men were aged—that is to say, above 60 years old, or thereabouts when they died, without any curious determination; whether such aged persons died purely of age, as for that the *Innate heat* was quite extinct, or the *Radical moisture* quite dried up (for I have heard some candid physicians complain of the darkness which themselves were in hereupon), I say that these distinguishments being but matter of sense, I concluded the searchers report might be sufficient in the case.

7. As for *Consumptions*, if the searchers do but truly report (as they may) whether the dead corps were very lean, and worn away, it matters not to many of our purposes whether the disease were exactly the same as physicians define it in their books. Moreover, in case a man of 75 years old died of a cough (of which had he been free he might have possibly lived to 90), I esteem it little error (as to many of our purposes) if this person be in the table of casualties, reckoned among the aged, and not placed under the title of coughs.

8. In the matters of *infants*, I would desire to know clearly what the searchers mean by infants, as whether children that cannot speak—as the word infant seems to signifie—or children under two or three years old; although I should not be satisfied whether the infant died of wind, or of teeth, or of the convulsion, etc., or were choked with phlegm, or else of teeth, convulsions and scowring, apart or together, which they say do often cause one another; for I say it is somewhat to know how many die usually before they can speak, or how many live past any assigned number of years.

9. I say it is enough if we know from the searchers but the most predominate symptoms; as that one died of the headache, who was sorely tormented with it, though the physicians were of opinion that the disease was in the stomach. Again, if one died *suddenly*, the matter is not so great, whether it be reported in the bills, *suddenly, apoplexy, or Planet-stricken*, etc.

10. To conclude. In many of these cases the searchers are able to report the opinion of the physician who was with the patient, as they receive the same from the friends of the defunct; and in very many cases, such as *drowning, scalding, bleeding, vomiting, making away themselves, lunatiques, sores, smallpox*, etc., their own senses are sufficient; and the generality of the world are able pretty well to distinguish the *gout, stone, dropsie, falling-sickness, palsie, agues, pleurisy, rickets*, from one another.

He then proceeds more at length with regard to those diseases "which are aptest to be confounded and mistaken," some of which we shall notice under DEATH, CAUSES OF.

In his book was included a T. of marriages, christenings, and burials, deduced from a country parish in Hampshire; also for the town of Tiverton, and for the parish of Cranbrook; and prob. as a consequence of examining these bills, he has a chapter "of the country bills," which demands some notice. He says in "an appendix" [3rd ed., 1665]:

Forasmuch as a long and serious perusal of all the B. of Mort. which the great city hath afforded for almost fourscore years, hath advanced but the few obs. comprised in the fore-going treatise; I hope very little will be expected from the few scattered papers that have come to my hands since the pub. thereof, especially from one that hath learned from the Royal So. how many obs. go to the making up of *Theoreme*, which (like oaks and other trees fit for durable building) must be of many years growth.

The accounts which follow I reckon but as timber and stones; and the best inferences I can make are but as hewing them to a square; as for composing a beautiful and firm structure out of them, I leave it to the architecture of the said So., under whom I think it honour enough to work as a labourer.

He offers some obs. on the Dublin bills [DUBLIN], and then proceeds:

I have here inserted two other country bills, the one of *Cranbrook*, in Kent, the other of *Tiverton*, in Devonshire, which with that of Hantshire, lying about the midway between them, give us a view of the most Easterly, Southerly, and Westerly parts of England. I have endeavoured to procure the like account from Northumberland, Cheshire, Norfolk, and Nott nghamshire: thereby to have in view of seven counties most differently situated; from whence I am sorry to observe that my southern friends have been hitherto more curious and diligent than those of the north. The full obs. from these bills is, that all these 3 countrey bills agree that each wedding produces 4 children, which is likewise confirmed by the Bills of Amsterdam. Secondly, they all agree that there be more males born than females, but in different proportions, for at Cranbrook there be 20 males for 19 females; in Hantshire 16 for 15; in London 14 for 13, and at Tiverton 12 for 11. Thirdly, I have inserted the bills themselves to the end that whoever pleases may examine by all three together the obs. I raised from the Hantshire bill alone; conceiving it will be more pleasure and satisfaction to do it themselves than to receive it from another hand. Only I shall add, as a new obs. from them all, that in the years 1648 and 1649—*being the time when the people of England did most resent the horrid parricide of his late Sacred Majesty*—there were but 9 weddings in that year in the same places, when there were ordinarily between 30 and 40 p.a.; and but 16 when there were ordinarily at other times between 50 and 60. . . . [MARRIAGES.]

I have also supplied the tables from the 3 generall bills for the years 1662, 1663, and 1664, which you will find to justify the former obs. But most eminently, that which I take to be of most concernment, namely, of the difference between the numbers of males and females. [POPULATION.]

In the end he considered he had arrived at "a new and accurate thesis of policy, built on more certain reasoning than had yet been adopted;" and that opinion we thoroughly indorse.

It appears that in 1664 the Co. of Parish Clerks commenced keeping a permanent register for reference in their Hall; but the earlier part of this register was afterwards lost. "The Co. are of opinion that the same was lent to Mr. Graunt, to enable him to write his *National and Political Obs.*, but by some accident never returned." The bills for this and the following year were also defective in the returns of christenings.

In 1665—the year before the *Great Fire of Lond.*—the City had another very serious visitation of the plague. The bill for the year—"A General Bill for this present year, ending the 19 of December, 1665, according to the Report made to the King's Most Excellent Majesty, by the Co. of Parish Clerks of Lond., etc."—gives the following summary of the results; the details of the several parishes we omit, they being the same as in 1625, except that the out-parishes were now 12:

Buried in the 97 Parishes within the walls, ...	...	...	...	...	...	...	...	15,207
Whereof of the plague ...	...	...	...	...	...	...	...	9887
Buried in the 16 Parishes without the walls ...	...	...	...	...	...	...	...	41,351
Whereof of the plague ...	...	...	...	...	...	...	...	28,888
At the Pesthouse, total buried ...	...	...	...	...	...	...	...	159
Of the plague ...	...	...	...	...	...	...	...	156
Buried in the 12 out-Parishes in Middlesex and Surrey ...	...	...	...	...	...	...	...	28,554
Whereof of the plague ...	...	...	...	...	...	...	...	21,420
Buried in the 5 Parishes in the City and Liberties of Westminster ...	...	...	...	...	...	...	...	12,194
Whereof of the plague ...	...	...	...	...	...	...	...	8403
The total of all the christenings ...	...	...	...	...	...	...	...	9967
The total of all the burials this year ...	...	...	...	...	...	...	...	97,306
Whereof of the plague ...	...	...	...	...	...	...	...	6,8596

Then follows the "Diseases and Casualties this year:"

Abortive and Stilborne ...	...	...	...	617	Bloody Flux, Scowring & Flux ...	...	...	185
Aged ...	...	...	...	1545	Burnt and Scalded ...	...	...	8
Ague and Feaver ...	...	...	...	5257	Calenture ...	...	...	3
Appolex and Suddenly ...	...	...	...	116	Cancer, Gangrene and Fistula ...	...	...	56
Bedrid ...	...	...	...	10	Canker and Thrush ...	...	...	111
Blasted ...	...	...	...	5	Childbed ...	...	...	625
Bleeding ...	...	...	...	16	Chrisomes and Infants ...	...	...	1258

Cold & Cough	68	Meagrom & Headach	12
Collick & Winde	134	Measles	7
Consumption & Tissick	4808	Murthered & Shot	9
Convulsion & Mother	2036	Overlaid & Starved	45
Distracted	5	Palsie	30
Dropsie & Timpany	1478	Plague	68,596
Drowned	50	Plannet..	6
Executed	21	Plurisie... ..	15
Flox & Smallpox	655	Poysoned	1
Found Dead in streets, fields, etc.	20	Quinsie... ..	35
French Pox	86	Rickets... ..	557
Frighted	23	Rising of the Lights	397
Gout & Sciatica	27	Rupture	34
Grief	46	Scurvy	105
Griping in the Guts... ..	1288	Shingles & Swine Pox	2
Hang'd & made away themselves	7	Sores, Ulcers, Broken and Bruised Limbs	82
Headmould shot and mould fallen	14	Spleen	14
Jaundies	110	Spotted Feaver & Purples... ..	1929
Impostume	227	Stopping of the Stomach	332
Kild by severall accidents... ..	46	Stone and Stranguary	98
King's Evill	86	Surfet	1251
Leprosie	2	Teeth & Worms	2614
Lethargy	14	Vomiting	51
Livergrown	20	Wenn	1

The Bill finishes up as follows :

Christened.—Males	5114.	Females	4853.	In all	9967
Buried.—Males	58,569.	Females	48,737.	In all	97,306
Of the Plague... ..					68,596
Increase in the Burials in the 130 Parishes and at the Pesthouse this year					79,009
Increase of the Plague in the 130 Parishes and the Pesthouse this year					68,590

In 1665 there were pub. several curious works and pamp. which we shall briefly notice.

(1). *Reflections on the Weekly B. of Mort. for the Cities of Lond. and West., and the Places Adjacent; but more especially so far as they Relate to the Plague, and other Mortal Diseases that we English are most subject unto, etc.* Lond., "printed for Samuel Speed, at the Rainbow, in Fleet St." And therein is contained a B. of mort. for the year 1593, being a plague year.

(2). *The Four Great Plagues, viz., 1593, 1603, 1625, and 1636, Compared with the Weekly B. of Mort. printed every Thursday in the said Years; by which an Increase and Decrease is plainly discovered in all those years.* "Printed for Peter Cole, at the Printing Press in Cornhill, in the Royal Exchange." A copy of this passed with the library of the late Sir Hans Sloane into the Brit. Museum. It contains a Bill of the Buried of all Diseases within Lond. and the Liberties thereof, from March to December, 1593.

(3). *A Collection of the Original B. of Mort., Official Placards, and other Public Papers and Notices, Placarded and Pub. by Authority, during the various Plagues in Lond., from 1592 to 1670 (2 vols.).* [Particularly copious and curious as to the Great Plague of the year 1665.]

(4). *London's Remembrancer, or a True Account of every particular Week's Christenings and Mort., in all the Years of the Pestilence, within the cognizance of the B. of Mort., being xviii Years.* By John Bell, Clerk to the Co. of Parish Clerks. The bills here given comprehended 130 Parishes, and distinguished the parishes by the four divisions, viz., 97 parishes within the walls; 16 without the walls; 12 out-parishes in Middlesex and Surrey; and 5 parishes in the City and Liberties of Westminster. Of the parishes within the City that of St. James's, Duke's Place, was alone omitted from the bills. Some of the parishes without the walls were not included in the bills.

(5). *Certain Necessary Directions, as well for the Cure of the Plague as for Preventing the Infection.*

(6). *Weekly Bills for the Plague Year, printed by E. Cotes, printer to the Co. of Parish Clerks.*

(7). *London's Dreadful Visitation, or a Collection of all the B. of Mort. for this Present Year; beginning the 20th of Dec., 1664, and ending the 19th Dec. following.* By the Co. of Parish Clerks of London. By way of preface to this book there is an address, "The Printer to the Readers," which shows the spirit of awe the plague visitations inspired in many men's minds :

Courteous reader, I presume that the candor of thy ingenuity is such that thou wilt not rashly condemn me of imprudence in the reprinting these sad sheets. First understand the reasons moving me thereunto, and then I am somewhat confident that thou wilt approve of my design. I know that romances and play-books too much gratifie the humours of the populace; but humble and sincere Christians with delight recall to minde God's mercies, and with awfulness tremble at His judgements: Behold, the ensuing papers will assist thy meditations in both: Consider His mercy to thee and mee, that we are yet in the land of the living, to work out our salvation with fear and trembling: His judgements on many thousands in or near this city, whom He hath in one year swept away with the besome of a temporal destruction: O let us not imagine that they were greater sinners than we, the survivors! for except we speedily and seriously repent, we shall all likewise perish, either Similitudine, or Certitudine Pana: But I am a printer, no preacher; I shall therefore wave such discourses, and briefly, yet perspicuously, render a faithfull account, why I undertook this publication.

In the year 1625 the stroke of the Lord's hand was heavy upon this city and suburbs, which year was ever since called *The Great Plague*: Now though thou hast seen probably several printed general reports, given by the parish clerks in that year, yet I am not able to recover all the particular weekly bills thereof; the sight of them hath been much desired these times; but it is beyond my power

as yet to answer men's expectations. That posterity may not be any more at such a loss, I resolved to communicate unto the nation these subsequent leaves: In all humility beseeching the Omnipotent to confer upon us such an *uniforme* and *cordial repentance*, that every one of us may search out the *plague* of his own *heart* and *brain*, and purge ourselves, by His gracious assistance, from all filthiness of flesh and spirit; that so He may, in the riches of His tender compassion, return in favor to this sinful city, and restore health to our habitations: That neither the physicians of our souls or bodies may hereafter in such great numbers forsake us; and that neither my self, or any other of my profession, may have occasion, for the future, to print such *dreadful lines*.

Then follows each *weekly* bill for the year; and the "general bill" for the year, from which we have already quoted.

Prob. as a consequence of the attention thus drawn to the bills, a further improvement was introduced: the totals of the christenings were distinctly set down in the bills, under each of the 4 divisions.

In 1665 was pub. 3rd ed., "much enlarged," of Graunt's *Natural and Political Observations, etc.*, and therein was contained mention of the first known B. of Mort. for Dublin, viz., "A Bill of Mort. from the 7-6 July to the end of Aug. 1662." [DUBLIN, BILLS OF MORT. FOR.]

During several weeks following the Great Fire (Sept. 1666) the bills were not pub. The deaths for these several weeks were afterwards given together in one bill.

In 1667 was pub., *The Report of all the Christenings and Burials within the City of Lond. and the Liberties thereof, with the Out-parishes thereunto Adjoining, as also the City and Liberties of Westminster; from the 10th March to the 27th of the same, 1667, made by the Co. of Parish Clerks*. Similar returns were also made for the years 1667, 1669, 1670, 1702, 1704, 1705, 1708, and 1709.

In 1676 there was pub. *Observations upon the London B. of Mort.*, wherein was contained tabular results deduced from the earlier bills. Sir Wm. Petty, in his essay *Of the Growth of the City of Lond., and of the Measures, Periods, Causes, and Consequences thereof*, pub. 1682, made a continuation of this table for the 18 years 1665-82 inclusive.

Lord Chief Justice Hale, in his *Primitive Origination of Mankind*, pub. 1677, says, that "nothing can be clearer than the gradual increase of mankind to be seen by the curious obs. in the B. of mort."

De Laune said, in 1681, "The B. of mort. in times of no infection do yearly amount to 20,000 and odd, which is three times more than Amsterdam; and equal to, if not beyond Paris, as by the bills themselves may be seen."

In 1682 Sir Wm. Petty—founder of the great house of Lansdowne—pub. an *Essay in Political Arithmetic; concerning the People, Housings, and Hospitals of Lond. and Paris*. An ed. of this work was afterwards done into *French*; and soon after its appearance Louis XIV., we are told, ordered more exact regis. of births and deaths to be kept in France "than had before been known in Europe."

About this period also Petty pub. *Observations upon the Dublin B. of Mort., 1681, and the State of that City*. He commences his essay as follows:

The obs. upon the Lond. B. of mort. have been a new light to the world; and the like obs. upon those of Dublin may serve as snuffers to make the same candle burn clearer. The Lond. obs. flowed from bills regularly kept for near one hundred years; but these are squeezed out of 6 straggling Lond. bills, out of 15 Dublin bills, and from a note of the families and hearths in each parish in Dublin, which are all digested into the one table or sheet annexed. . . . [DUBLIN BILLS OF MORT.]

Many of the other obs. made by Petty will be given under LONDON; POPULATION; and other heads which they most concern.

In 1689 there was pub., *A Proposal for better Securing of Health, containing Reflections on the Lond. Weekly B. of Mort., and Remedies to Lessen the Great Annual Amount of Deaths* (fo. sheet).

In 1689 also Halley read his famous paper before the Royal So.: *An Estimate of the Degrees of the Mort. of Mankind*; and the main facts therein were deduced from the B. of mort., or registers of *Breslau* in Silesia. We shall speak more at large upon this matter under BRESLAU TABLE OF MORT.

The Co. of Parish Clerks do not seem to have seen the value of a permanent record of its labours, for Maitland tells us that "by the unpardonable omissions of the Co.'s clerk, there's a chasm in the 3rd vol. of their register, from the 2nd Nov., Anno. 1698, to the 16th Dec., 1701," which defects he managed to supply for his own purposes from Graunt; and from the library of Sir Hans Sloane. [Or was it that some other compiler had borrowed and not returned this portion of the regis.? See 1664.]

The weekly bills of the Parish Clerks paint the picture with photographic exactness. In 1702—first of Queen Anne—the mort. of which was below both the preceding and following year, 5639 persons are reported as having died of convulsions, 2730 of consumption, and 2682 of fever. One person is described as having perished through being "choaked with fat;" while 61 died of "surfeit;" 9 of "St. Anthony's fire;" 66 were drowned; 21 were "found dead in the streets;" 23 "hanged and made away themselves;" 11 were murdered; 90 "overlaid;" and 1 "stifled in mud." Only 1455 people are reported as having died of old age. The second year of Queen Anne showed no great variations in the list of curious items, two more individuals being reported as "choaked;" 70 perishing of "surfeit;" 10 of "St. Anthony's fire;" 61 as being drowned; 72 hanged; 12 murdered; and 69 "overlaid." The rising mort. of the next few years.

denotes the increase of the smallpox. This fatal disease, which, in some respects, took the place of the plague of former times, destroyed seldom less than a thousand lives p.a., though in some years up to 4 and 5 thousand. [SMALLPOX.] To this there was added another calamity, which may almost be called a disease—namely, the vast amount of drunkenness which came to prevail about this period, and which is mentioned as something frightful in all the records of the time.—*Martin*.

Addison composed, about 1711, the following humorous B. of mort. in a paper, *Dying for Love*:

T. S. wounded by Zelinda's scarlet stocking as she was stepping out of a coach.

Tim Tattle killed by the tap of a fan on his left shoulder by Coquetilla, as he talked carelessly with her at a bow window.

Samuel Felt, haberdasher, wounded in his walks to Islington, by Mrs. Susannah Cross Stich, as she was clambering over a style.

John Pleadwell, Esq., of the Middle Temple, assassinated in his chambers, the 6th inst., by Kitty Sly, who pretended to come to him for advice.

On the occasion of the Gov. proposing to inflict a penny stamp on newspapers, etc., about 1712, there was pub. *The Case of the Co. of Parish Clerks, Relating to the Duties on Pamphlets, etc., humbly offered to the Hon. House of Commons*; wherein it is set forth that:

The said Co., by their Charter, are obliged to keep a press in their Hall, for printing the weekly and yearly B. of mort., wherein it is appointed that Searchers shall in every parish constantly view the body or bodies of every person or persons that shall happen to die, and report the nature of the distemper of every person to the clerk of that parish where the said person shall so die, and according to such report every Parish Clerk is thereby obliged to bring in his account weekly to the said Co.'s Hall of such distempers, and also of all christenings which shall happen, in order that the said Co. or their Clerk take an account weekly thereof, and send the same to Her Majesty and to the Lord Mayor of the City of London; likewise to give an account of all such Freemen and their widows as shall happen to die in each week, that the same may be presented to the Court of Aldermen, in order to take care of all orphans. There is also divers other orders mentioned in the said Charter—as their keeping a clerk, a printer and beadle belonging to the said Co., which is a great charge to the same.

That such reports are accordingly made by the said Searchers to the said Clerks, and accounts thereof weekly sent up to Her Majesty, and to the Lord Mayor as aforesaid; and likewise an account thereof dispersed accordingly in each respective parish within the said B. of Mort., the profits whereof is the support of the charge and expences of the said Co., they having little or no lands or estate to defray the same; and if the said duty be laid upon the said bills, very few persons will take in the same; whereby the said Co. will be out of any capacity of conforming to their Charter, or giving Her Majesty or the Lord Mayor any such account as aforesaid; and must likewise totally dissolve the said Co., they not having wherewithal to support the charge of the same.

Wherefore and for that the said Co. have been at a great charge and expence in building a hall in pursuance of the said Charter, and have always conformed themselves thereto; and the said Bill being of very great advantage, not only for the security of all orphans, but also a general satisfaction to all persons, by showing the nature of the diseases, and of the increase and decrease of the burials each week; which must inevitably be laid aside if the said duty is charged on the same: The said Co. therefore humbly hope that this Hon. House will take the same into consideration and exempt the weekly and yearly B. of mort. from the intended duty mentioned in the said Act concerning pamp. and papers, etc.; otherwise the said Co. (which has been of ancient and long standing) will be utterly dissolved and overthrown; all which is humbly submitted to the consideration of this Hon. House.

A provincial B. of Mort. given in *The Guardian*, No. 136, edited by Richard Steele (about 1714), contained the following among the causes of death:

Of a six-bar gate 4	Of October 1
Of a quick-set hedge 2	Broke a vein in bawling for a knight of the
Bewitched 13	shire 1
Of an evil tongue 9	By the parson's bull 1
Crost in love 7	Shot by mistake 1
Broke his neck in robbing a hen-roost ... 1	Of a mountebank doctor 6
Surfeit of curds and cream 2	Old age 100
Took cold sleeping at church 11	

Among the curious causes of death, selected from the bills of a later date, are the following:

Died from want (in Newgate) 1 in A.D. 1724	Choaked with fat 1 in A.D. 1744
Murdered in the Pillory ... 1 in ,, 1732	do. do. 2 in ,, 1745
Killed in the Pillory 1 in ,, 1756	Licked by a mad dog 2 in ,, 1757

In 1726 Mr. John Smart, author of the famous Int. Tables, suggested that, with a view to the providing of data for the construction of proper T. of mort.,

If those in whose power it is would oblige the Parish Clerks weekly to make a return of the age of every person dying in each respective parish within the weekly B. of mort., in like manner as they now make their returns of the diseases and casualties; and if the number dying of every age were printed at the end of every year with the yearly Bill; then there would in time be a good foundation to build upon; and whenever this is done in Lond., it is probable it will be done likewise in other places, both at home and abroad, where accounts of births and burials are kept, which would make the foundation still more certain.

Apparently, in pursuance of this recommendation, a summary of the ages of all who died in Lond. was added in 1727-8. Thus, under 2 years of age, 9851; between 2 and 5, 2407; 5 and 10, 1038; 10 and 20, 950; and so on for each decade, until 90 and upwards, 135; so that, notwithstanding pestilence and other scourges, some did live to a good old age.

The area of the bills had become slightly extended since 1636, and now included in all 22,618 acres, beyond which limits the "old bills" never extended.

The following criticism has been offered on the Lond. Bills of this period:

The figures given reveal some striking facts regarding the health of Lond. at this period. We find

that whereas in the year 1728 the baptisms were 16,625, the number of those who died under two years of age amounted to 9851, or considerably more than one half of the total births. Between the ages of two and five, 2407 more children died, so that, subtracting the whole of this infant mort. from the 16,625 births, the surviving generation consisted of but 4367 individuals. This state of things grew worse in the succeeding year, 1729. While the whole of the reported baptisms amounted to but 17,060 the deaths of infants under two years of age were 10,735, and of those between the ages of two and five, 2516; making a total of 13,251, equal to nearly three-fourths of the whole birth-rate. Imperfectly though the registers may have been kept at this, as at former times, and considerable as was undoubtedly the number of children not baptized, this enormous infant mort. cannot be explained otherwise than on the supposition of the most defective sanitary arrangements and a general disregard of public health within the metropolis, added to growing licentiousness. The case is forcibly stated by a contemporary writer, Mr. Corbyn Morris.

A Bill of Mort. was kept in *Amsterdam* in 1728, from which we have already quoted [AMSTERDAM]. It is not improbable that earlier bills were kept there.

In 1729 a circumstance arose which showed the causes of fluctuations to which the bills were subjected. In that year the christenings and deaths of St. Peter *ad Vincula* in the Tower of Lond. were added to the bill; but a contest arising between the inhabitants of the Tower-Liberty without and within the Tower, whether this church of St. Peter *ad Vincula* was parochial or not, the question was tried in the Court of King's Bench at Westminster in 1730, when it was determined in the negative; and in the bill for 1731 the returns were again omitted.

In 1733 an account or bill was commenced at Northampton of the ages at which the inhabitants died. It was from this bill, combined with another commenced in 1741, that Dr. Price derived the data for founding the NORTHAMPTON T. OF MORT.

In 1737 Mr. Weyman Lee pub. *An Essay to Ascertain the Value of Leases and Annu. for Years and Lives, etc., wherein were many obs. on the B. of Mort.* There is nothing very new or orig. in his remarks upon the bills. He found that 1 in 2786 lived to the age of 100; 1 in 200 to 90; 1 in 33 to 80; 1 in 14½ to 70; 1 in 8 to 60; 1 in 5 to 50; and 1 in 4 to 45.

In 1738 Mr. John Smart, author of the famous Int. Tables bearing his name, pub. *A T. of Mort. deduced from the Lond. Bills for the Ten Years 1727-37.* This table was very little known. [LOND. MORT. T.]

In the same year Herr Kersseboom, of the Hague, pub. in Amsterdam, a tract on the prob. number of people in Holland and West Friesland, which he had deduced from the B. of Mort. He afterwards used this as a base for the construction of his *T. of Vitality*. [KERSSEBOOM'S MORT. T.]

Maitland, in his Hist. of Lond. (1739), says:

The B. of mort. of the City of Lond. is certainly one of the most defective of its kind, none being mentioned therein but such as are buried in parochial cemeteries, precincts, and liberties; by which means many burial grounds belonging to the Church of England (such as St. Paul's Cathedral, Westminster Abbey, the Temple Church, St. Peter's *ad Vincula*, the Rolls and Lincoln's Inn Chapels, the Charter House, and divers others belonging to Hospitals) are not only precluded the same, but likewise those belonging to Dissenters of all denominations, together with all those that are buried from within the B. of Mort. in the several circumjacent parishes; whereby the number of persons that die within this city and suburbs is greatly diminished, to the no small lessening the grandeur of Lond. in the eyes of the world, in respect to the number of its inhabitants. Therefore 'twere better the bill were laid aside, than to suffer such a defective account to be printed, to the dishonour of this incomparable City. But much more laudable would it be to enable the Co. of Parish Clerks to pub. a perfect account of the births and deaths (instead of that imperfect one of christenings and burials) in this vast metropolis; which account would not only greatly redound to the honour of this vast City, but likewise to the nation in general, to see its celebrated capital excel all other cities upon earth in respect to the number of its inhabitants, whereby is manifested its great commerce and opulency.

After some observations, not material to our present purpose, he continues:

For the better enabling me to calculate the number of the inhabitants of this City, I found myself indispensably oblig'd to have recourse to the several registers belonging to the undermention'd burial grounds, where in all places (though in many with great difficulty) I succeeded by getting an account of the number of persons buried in each thereof, from all parts within the B. of Mort. in the year 1729, except the Presbyterians great burial ground in Bunhill-fields, where the lessee, out of a selfish view, would not discover the vast number buried there in the said year, otherwise than that I might safely insert one for every day of the year. This obstinate refusal put me upon inquiring of John Smith, the grave-digger, who assur'd me that tho' he kept no register, in the course of his long service he had made such observations that he was sure they buried annually between 700 and 800; but lest I should exceed the number, I have chosen only to insert 500 for the aforesaid year; which, according to the opinion of divers of the most eminent undertakers I apply'd to, is much too few.

His list of burial places not included in the bills numbered 64; the total burials whereat in the year 1729, amounted to 3038.

Bills were kept in *Edinburgh* early in the last century. Dr. Price constructed a T. of Mort. from them, for a period of 20 years, 1739-58 [EDINBURGH]. After 1758 he says the bills were kept very irregularly.

Bills were kept in *Norwich* early in the last century. From a copy of those kept for the 30 years 1740-69, during which period the ann. average christenings were 1057, and burials 1206, Dr. Price constructed the NORWICH T. OF MORT.

In 1742 Mr. Thomas Simpson pub. his *Doctrine of Annu. and Rev., etc.*, and therein he gave a "very exact Table for estimating the prob. of Life, deduced from Ten Years Obs. on the B. of Mort. of the City of Lond." [LOND. T. OF MORT.]

In 1747 Mr. James Hodgson, F.R.S., pub., *The Valuation of Annu. upon Lives deduced from the Lond. B. of Mort.* [ANNUITIES ON LIVES.]

We must now introduce another somewhat famous writer upon the subject, Dr. Thomas Short, M.D., who in 1750 pub. : *New Observations, Natural, Moral, Civil, Political and Medical, on the City, Town and Country B. of Mort. ; to which is added Extended Abstracts of the Writings of the Best Known Authors upon the Subject, with an Appendix on the Weather and Meteors.* Between 1740 and 1750 this industrious gentleman collected regis. of christenings and burials of 160 country parishes, besides those of many chapels lying in sundry situations, on various soils, and the inhabitants having different businesses and ways of life. The following description of one of his Tables will afford the reader some insight into Dr. Short's labours :

The line below the yearly totals, col. 1, gives the number of rainy days that year ; col. 2, how many people died on these days ; col. 3, how many days were showery, besides the rainy days ; col. 4, the number that died on these days ; col. 5, number of drizzling days ; col. 6, how many died ; col. 7, on how many days thunder was heard there ; col. 8, how many died there ; col. 9, the number of days on which it snowed ; col. 10, how many died—total. The table further comprises the specified number of deaths during the prevalence of the wind in "eight points" of the compass respectively, though the ages at which the deaths occurred are not even incidentally mentioned.

The treatise, however, is so unskilfully arranged, as to be almost statistically unavailable.

In 1751 Mr. Corbyn Morris pub. his *Observations on the Past Growth and Present State of the City of Lond.*, and thereto he annexed : A complete table of the christenings and burials within the City, from 1601 to 1750, both years inclusive ; together with a table of the numbers which have annually died of each disease from 1675 to that time ; and also a further table representing the respective numbers which have annually died of each age, from 1728 to that year. From this last he particularly attempted to show the then increasing destruction of infants and adults in the city, and consequent thereto the excessive drain continually made upon all the provinces of the kingdom for recruits.

The subject continued to engage much attention. The writer pointed out that, although the then bills were kept in a better method than formerly, they were yet defective in many particulars of the most important concern, and to that extent at least were open to improvement. On this point we had better hear his views in his own language :

1st. the extent of time at the beginning of life is not sufficiently divided, although the degrees of strength at this time are continually varying from each other, and with swift steps—insomuch that one month in the earliest infancy produces greater alterations than several years in manhood. These successive and violent ravages in infancy ought therefore to be minutely described, in order to furnish cautions for the better security of life in its tender years ; upon which the very preservation, and much more the increase, of our species principally depends.

2nd. The diseases are not connected with the several ages ; thus, for instance, although it appears by the Bill for the year 1750, that 4543 died of consumption ; 5837 of convulsions ; 4294 of fevers, and 1229 of the smallpox ; yet of what ages these several persons are is uncertain. Whereas, by annexing to every disease the number of persons of each age dying thereof, it would appear, from remarks upon a competent series of years, to what diseases persons of every age were particularly subject. From whence, if these Bills were extended throughout the kingdom, the growth or declension of every particular disease would be clearly discovered. This would furnish a constant fund of instruction to the intelligent physician ; and at particular critical junctures might suggest caution, not unworthy the attention of the legislative body of the kingdom ; at least, would make a faithful report to it of the state of the national health, and of the annual increase or diminution of the people.

Almost a century elapsed before the latter portion of Mr. Morris's recommendations were carried into effect. [See 4th and 5th reports of the Regis.-Gen.]—He added, that it would be requisite that the amount of weddings should be inserted in the bill ; and also the respective numbers of those accidentally sickening of the smallpox and dying thereof ; and of those receiving it from inoculation and dying under that process. He further says :

Dissenters should also be required to keep their bills in the same manner ; and to deliver a monthly account to the churchwardens of each parish of all the particulars prescribed which have happened to persons within their congregations belonging to such parish. But no difference of sects to be inserted in the B. of mort., for two reasons : 1st. Because it would annually bear a publick testimony of our several religious divisions ; and 2ndly. Because it may oftentimes be very difficult to assign the religion of the person deceased.

In 1752 Mr. James Dodson prepared a paper on *B. of Mort.* : wherein he showed the importance of their being so kept as to afford the means of *Valuing Annu. on Lives*, and proposed alterations which appeared to him calculated to fit them for the purpose. The paper will be found in *Phil. Trans.* for that year.

In 1754 Mr. S. Stonehouse pub. *The Valuation of Annu. on Lives deduced from the Lond. B. of Mort.*, wherein was a T. of Mort. deduced from the Lond. Bills for a period of 20 years—1728 to 1747. [LOND. T. OF MORT.]

In 1755 the Rev. Dr. Brakenridge addressed a letter to the President of the Royal So., in which he proposed to remedy the defects existing in T. of Mort. deduced from the Lond. B. of Mort. by blending the results with those obtained from the Registers of Breslau. [MORT. T.]

By the middle of the 18th century, Bills of Mortality had become very general ; and many of the continental cities pub. them. The Bill for the City of *Paris*, 1758, gives the following particulars :—Burials, 21,120 ; Christenings, 19,369 ; Marriages, 4089 ; Foundlings, 4969.

The Bill for *Amsterdam*, same year : Burials, 1789 (decrease of 900) : Christenings, 4270 ; Weddings, 2417. Vessels arrived in the Texel, 1326. For earlier Bill for the city, see AMSTERDAM.

The Bill for *Vienna*, same year: Deaths: men, 1554; women, 1551; male children, 2004; female children, 1685: in all, 6798. Christenings, 5267. So that the number of burials exceeded the christenings by 1531; the number of burials in the year 1758 exceeded that of 1757 by 139; and that of the births was less by 117.

A general Bill of all the Christenings and Burials in Lond. from Dec. 13, 1757, to Dec. 12, 1758, contained the following summary of the ages at death:

Christened :				Died under 2 years of age				5971	
				Between	2	and	5	1795	
Males	...	...	7347	"	5	and	10	717
Females	...	...	6862	"	10	and	20	556
				"	20	and	30	1362	
				"	30	and	40	1589	
				"	40	and	50	1606	
				"	50	and	60	1368	
				"	60	and	70	1208	
				"	70	and	80	961	
				"	80	and	90	370	
				"	90	and	100	68	
								102	2
								103	1
								104	1
								106	1
								<hr/>	
								17,576	
Decrease in the Burials									
this year								3737	

I think comes as near the truth as any supposition we can make), this will make the whole number of deaths to be one-fifth more than the regis. in the bills. If the state of deaths which are not regis. in the bills be the same, or nearly the same, in this parish as in others, the defect in this article may with some degree of prob. be supplied. But there is another material defect, which affects both baptisms and burials, and cannot be supplied so probably. This arises from the neglect of Parish Clerks and their deputies in not making exact returns to the common Hall. From some large parishes no account is sent for several weeks together, and the account for several is sometimes inserted in one weekly bill. If this was done without any omissions, the account would come right at the end of the year; but omissions in many there is good reason to believe are never supplied or corrected. This is often to be ascribed to negligence; but it is sometimes owing to disputes between the clerks in orders and the officiating clerks, that the bills of births and burials are neither so regularly kept, nor so exactly returned as they ought to be. What allowance is to be made for these omissions, can be hardly settled; but it is judged that they are not inconsiderable.

It is stated in the 7th ed. of the *Ency. Brit.* that this treatise was arranged by Dr. Birch, Sec. of the Royal So., from materials furnished by Dr. Heberden; and that the T. of Prob. was calculated by James Postlethwayte, Esq. The pub. is, in every respect, worthy of being consulted, especially by statisticians interested in the early history of the London Bills, these being printed at full length, and a very judicious preface is given. It may be well, however, to add, what Mr. Farren has already pointed out, viz., that certain of the Lond. Bills having been frequently copied by different printers, the compilers of the above collection do not seem to have always procured the primary issues, and have thus occasionally reprinted in the totals, etc., typographical errors which did not exist in the original copies. [LOND. T. OF MORT.]

Dr. Thomas Heberden, compiled a Bill for the Island of *Madeira* for the 8 years 1759-66, of which we shall speak under *Madeira*, and under MORT. OBS.

Many of the English cities and towns pub. their Bills regularly about this period. Here are a few specimen bills:

A general account of all the christenings and burials at *Norwich*, from Wednesday, the 26th Dec., 1759, to Wednesday, the 24th Dec., 1760:

Christened.						Buried.					
Males ...	...	...	...	...	526	Males ...	...	...	...	...	536
Females ...	...	...	...	...	509	Females ...	...	...	...	...	528
In all ...	...	...	...	...	1035	In all ...	...	...	...	...	1064
Increased ...	...	...	...	...	26	Decreased ...	...	...	...	...	563

An account of all the christenings, burials, and marriages in *Liverpool*, from Dec. 24, 1759, to Dec. 25, 1760:

Christenings.				Burials.				Marriages.	
Males ...	...	...	392	Males ...	...	...	378	416	
Females ...	...	...	382	Females ...	...	...	339		

Decreased in christenings, 92. Decreased in burials, 264. Increased in marriages, 82.

Newcastle.—By an exact list that hath been pub. in this town there hath been christened this last year (1760), in our four parishes, 588; buried, 522. Increased in the christenings, 17; decreased in the burials, 9.

Yearly Bill for the City and Suburbs of *Dublin*, ending Dec. 28, 1760:

Buried.						Baptisms.					
Males ...	...	...	...	...	1003	Males ...	...	...	...	...	819
Females ...	...	...	...	...	990	Females ...	...	...	...	...	896
In all ...	...	...	...	...	1993	In all ...	...	...	...	...	1715
Increased ...	...	...	...	...	241	Decreased ...	...	...	...	...	15

In the Island of *Sealand*, including *Copenhagen*, the bill for 1760 was as follows:—9545 children were born, and 10014 persons died; and 2732 couple were married. In both the *Pomeranias*, subject to the King of Prussia, in 1760, the children baptized amounted to 10,935; the deaths were 13,903; and the marriages, 4062.

In the *Ann. Register* for 1761 is the following:

The *Lond. B. of mort.* for last year by the So. of Parish Clerks comes pretty near the calculation of 13 males to 12 females, the numbers being 7778 males, and 7173 females; an obs. long since made by Dr. Davenant, Sir William Petty, and other political arithmeticians.

Bills were kept in *Rome* during the last century—whether they were direct continuations of those *Rationes Libitinae*, of which we have spoken in the early part of this art, we cannot say; but we suspect not. The average number of inhabitants for the 10 years ending 1771 was 158,957. The annual average of births recorded for the same period was 4851; and of burials, 7367. [MORT. OBS.] [ROME.]

The practice—it may almost be said the fashion—for such enumerations increased, and every subsequent year furnishes similar records for some additional country, city, or parish. It even extended to the Colonies: thus, in 1763 we find the following bill for *Boston*, New England: from 4th January, 1762, to 3rd January, 1763, buried, whites, 390; blacks, 66; baptized, 418.—In *Norway*, during this period, very exact records were kept in all the principal cities and towns. The same in *Denmark* and *Saxony*.

From a bill compiled by Dr. Lee, for *Ackworth*, in Yorkshire, furnishing an exact account of all who died there for the 20 years ending 1767, it appeared that half the inhabitants reached the age of 46.

In 1767 Dr. Short pub. a further work: *A Comparative History of the Increase and Decrease of Mankind*; and he gives therein much information respecting Foreign B. of Mort.

In 1769 Dr. Price addressed to Benjamin Franklin his well-known *Essay containing Obs. on the Expectations of Lives ; the Increase of Mankind ; the Number of Inhabitants in Lond. ; and the Influence of Great Towns on Health and Pop*. This paper was read before the Royal So., and pub. in its *Trans.* The author, after speaking on the subject of "expectation," says :

These obs. bring me to the principal point which I have all along had in view. They suggest to us an easy method of finding the number of inhabitants in a place from a T. of obs. on the B. of mort. of that place, supposing the yearly births and burials equal. . . . But it is certain that they [the Lond. Bills] give the number of births and burials too little. There are many burial places which are never brought into the bills. Many also emigrate to the navy and army, and country ; and these ought to be added to the number of deaths. What the deficiencies arising from hence are cannot be determined. Suppose them equivalent to 6000 every year in the births, and 6000 in the burials. This would make an add. of 20 times 6000 or 120,000 to the last number ; and the whole number of inhabitants would be 651,580. If the burials are deficient only two-thirds of this number, or 4000, and the births the whole of it ; 20 multiplied by 6000 must be added to 314,290 on account of defects in the births. . . . The proportion of the number of births in Lond. to the number who live to be 10 years of age is, by the bills, 16 to 5. Any one may find this to be true, by subtracting the ann. medium of those who have died under 10 for some years past, from the ann. medium of births for the same number of years. Now, though without doubt Lond. is very fatal to children, yet it seems incredible that it should be so fatal as this implies. The bills therefore prob. gave the number of those who die under 10 too great in proportion to the number of births ; and there can be no other cause of this, than a greater deficiency in the births than in the burials.

Then, by way of note, he says :

One obvious reason of this fact is that none of the *births* of Jews, Quakers, Papists, and three denominations of Dissenters are included in the bills, whereas many of their *burials*. It is further to be attended that the abortive and still-born, amounting to about 600 ann., are included in the burials, but never in the births. If we add these to the christenings, preserving the burials the same, the proportion of the born according to the bills, who have reached 10, for 16 years from 1756 to 1771, will be very nearly one-third instead of five-sixteenths.

He adds another note to a subsequent ed. of this essay as follows :

Two whole parishes are omitted in the bills—*Marybone* and *Pancras* parishes. The former of these parishes is now one of the largest in Lond. The ann. medium of burials in it for 5 years to 1771 was 780. In *Pancras* parish this medium for the same period was 322. From an accurate account taken in March, 1772, of that part of this last parish which joins to Lond., it appeared that the number of inhabitants was then 3479, of whom 1594 were lodgers, and that the number of houses was 476, of which about 330 had been built in 7 years. Mr. Wales, in a pamph., of which more notice will be taken presently, gives the ann. medium of *burials* for 5 years to 1779, in *Marybone* parish, 1145 ; of births, 1008. In *Pancras* he gives the *burials* for the same period, 339 ; the births, 234.

Towards the conclusion of his essay he says :

The obs. I have made may perhaps help to show how the most is to be made of the lights afforded by the Lond. Bills, and serve as a specimen of the proper method of calculating from them. It is indeed extremely to be wished that they were less imperfect than they are, and extended further. More parishes round Lond. might be taken into them ; and by an easy improvement in the parish regis. now kept they might be extended thro' all the parishes and towns in the kingdom. The advantages arising from hence would be very considerable. *It would give the precise law according to which human life wastes in its different stages ; and thus supply the necessary data for computing accurately the value of all L. annu. and rev.* It will likewise show the different degrees of healthfulness of different situations ; mark the progress of pop. from year to year ; keep always in view the number of people in the kingdom ; and in many other respects furnish instruction of the greatest importance to the State.

A regis. or bill was kept for the parish of *Holy Cross*, near Shrewsbury, by the Rev. Mr. Gorsuch, for the 20 years ending 1770, which showed that nearly one half of those who died reached the age of 30. It was from this bill that Dr. Price constructed his T. OF MORT. FOR HOLY CROSS.

In 1771 Dr. Price first pub. his *Observations on Reversionary Payments*, etc., wherein he gave a T. of Mort. which he had constructed from the Lond. Bills for the 10 years 1759-68. At a later period he compiled another T. from the bills for the 10 years 1771-80. [LOND. MORT. T.]

In this same work was included an essay entitled : *Obs. on the proper method of constructing T. for determining the rate of Human Mort., the No. of Inhabitants, and the Values of Lives in any town or district, from B. of Mort., in which are given the Nos. dying ann. at all ages*, and therein the learned writer advanced the following proposition :

In every place that just supports itself in the number of its inhabitants, without any recruits from other places ; or where for a course of years there has been no *increase* or *decrease*, the number of persons dying every year at any particular age, and above it, must be equal to the number of the living at that age. The number for example dying every year at all ages from the *beginning* to the utmost *extremity* of life, must, in such a situation, be equal to the whole number *born* every year. And for the same reason the number dying every year at *one* year of age and upwards ; at *two* years of age and upwards ; at *three* and upwards, and so on, must be equal to the numbers that attain to those ages every year ; or, which is the same, to the numbers of the living at those ages. It is obvious that unless this happens, the number of inhabitants cannot remain the same. If the former number is greater than the latter, the inhabitants must *decrease* ; if less they must *increase*. From this obs. it follows, that in a town or country where there is no increase or decrease, *B. of mort. which give the ages at which all die will show the exact number of inhabitants, and also the exact law according to which human life wastes in that town or country.*

In order that these rules should hold good, it would be necessary that the pop. be kept up by natural operation, and not by immigration.

He adds by way of note :

Some have entertained a very wrong notion of the imperfections of the Lond. Bills. They do indeed

give the *whole* number of births and deaths, much too little; but the conclusions with respect to the prob. of life in Lond., and the proportion of inhabitants dying ann., depend only on the *proportions* of numbers dying in the several divisions of life; and these are given right in the Lond. Bills. For first: There seems nothing in this case that can be likely to cause the deficiencies in the bills to fall in one division of life more than another. But what decides this point is, that these proportions as given by the bills of *any* ten, or even *any* five years, come out nearly the same with one another; *and always very different from the proportions given by any other bills.* There are no other variations, than such as must arise from the fluctuations of Lond. as to increase and decrease; and also from some improvements in its state, which have lately taken place.

Speaking of the B. of Mort. kept at Northampton, he said:

It is much to be desired that like accounts were kept in every town and parish. It would be extremely agreeable to learn from them the different rates of human mort. in different places, and the number of people and progress of pop. in the kingdom. The trouble of keeping them would be trifling; but the instruction derived from them would be very important. I have already proposed one improvement of such accounts: I will add that they would be still more useful, did they give the ages of the dead after 10 within periods of 5 instead of 10 years. During every period so short as 5 years, the decrements of life may, in constructing T., be safely taken to be *uniform*. But this cannot be equally depended on in periods so long as 10 years.

There is yet another improvement of these accounts, which I shall take this opportunity to mention. They should contain not only a list of the distempers of which all die, like that in the Lond. Bills; but they should specify particularly the numbers dying of these distempers, in the several divisions of life. Accurate regis. of mort. kept in this manner, in all parts of the kingdom, and compared with records of the seasons and of the weather, and with the particular circumstances which discriminate different situations, might contribute more than can be easily imagined to the increase of the *physical* knowledge.

Almost immediately after this, bills on the plan recommended in the first portion of the last paragraph were issued at *Manchester* and *Chester*.

In two vols. of *Essays Medical and Experimental*, pub. by Dr. Percival, in 1773, there was contained: *Proposals for estab. more accurate and comprehensive Bills of Mort.*

In the *Phil. Trans.*, 1774 and 1775, appeared two papers from Dr. Haygarth, giving the Bills of mort. for *Chester*, during the years 1772-3, under an arrangement exhibiting their results with great clearness. Dr. Price used these Tables, and a continuation of them extending in all over the ten years 1772-81, in the construction of the CHESTER TABLE OF MORT.

Bills appear to have been kept in *Manchester* during the last century, the results of which we shall give under MANCHESTER.

In 1775 was pub. the second part of Dr. Moehsen's *Collection of Obs. for the better illustration of the great usefulness and value of Inoculation for the Smallpox*. He gave therein a good historical account of the first institution of Registers of Births, Marriages, and Deaths, and of their gradual progress and useful applications down to his time; also twenty-six Tables derived from the *Berlin* Bills of Mort. for a period of seventeen years, commencing with 1758, and ending with 1774. We have already given some account of the work under BERLIN MORT. TABLES.

In 1776 an investigation into the mort. of the *Laudable So. of Annu.* was made for the purpose of being used in a controversy then raging between the So. and Dr. Price and Mr. Dale, both of whom had charged that the operations of the So. were insecure. The report of the managers resulting from this investigation said, "We therefore think it incumbent on us, to set forth the inaccuracy of all B. of Mort., from information received from a number of parish clerks." In this case it was probably ignorance and prejudice, not sagacity, which induced the assault upon the bills. The managers of this and some other sos. of that period would have preferred that no accurate means of measuring life contingencies should be discovered. To work in the dark was their policy.

In 1779 a special bill was prepared for the parish of *Biddulph*, in Staffordshire, of which we shall give the details under MORT. OBS.

A Regis. of Mort. was kept at *Warrington*, in Lancashire, for 9 years, 1773-81, by Mr. Aikin, from which Dr. Price constructed a T. of Mort. [WARRINGTON MORT. T.]

We do not know precisely when B. of Mort. were first pub. in the U.S., but in 1782 a paper was prepared by Professor E. Wigglesworth, of Harvard University, embodying an estimate of the value of life in the U.S., and his obs. were based upon the B. of Mort. of the towns of Ipswich, Salem, and other places within the Commonwealth of Massachusetts; which bills were filed in the rooms of the Academy. In another paper which the learned Professor prepared a few years later (1789), he says:

On examining the B. of mort. on the files of the Academy, it appears that the So. are under obligations to a considerable number of gentlemen in different parts of the Commonwealth for the attention they have paid to this subject. . . . Returns have been made from towns scattered along the sea-coast from Nantucket on the S. to Portland and Casco Bay on the N. coast, and thro' the counties of Middlesex, Worcester, and Hampshire, in a W. direction. From Hingham, Ipswich [and 8 other places], *they have been made for a long course of years*; and though those which have been made from other places are for a shorter time, yet as they are from places very distant from one another, it is presumed that the result from a combination of these bills will give a very just representation of the increasing pop. of this State, etc.

An actual T. of Mort. was prepared from these bills. [AMERICAN T. OF MORT.]

In 1801 Dr. Heberden the younger pub. his work: *On the Increase and Decrease of Diseases*; and therein he announced his intention of pub. a new ed. of the B. of Mort. We presume he meant a new ed. of the collection prepared by his father. We do not find that he accomplished his design.

In 1801 Dr. Willan pub. his work on the *Diseases of Lond.* Many of his obs. were drawn from the B. of Mort.

In 1815 Mr. Milne pub. his since famous *Carlisle T. of Mort.*, which had been deduced from data supplied by special regis.—B. of mort. in an improved form—kept by Dr. Heysham, in the City of Carlisle, during the 9 years 1779–87. [CARLISLE T. OF MORT.]

In April, 1823, the *Annales d'Hygiène* contained a B. of Mort. for the City of *Palermo* during 1822, compiled by Dr. Francesco Calcagni. The number of inhabitants at the end of 1821 is stated to have been 160,051, and at the end of 1822, 161,735; but this last was derived from the first number only by adding to it the excess of the births above the deaths during the year 1822. No useful information is given as to the deaths. A peculiar feature of the bill consisted in tracing persons born out of wedlock to their graves, whatever age they might attain; and distinguishing the legitimate from the illegitimate in the number of deaths as well as of births. In 1822 the number of deaths of the legitimate was 4476, of whom 2294 were males, and 2182 females; that of the bastards, as they are called, was 418; of whom 151 were males, and 267 females. Of the illegitimate children born in that particular year 256 were boys, and 307 girls. Out of 4894 deaths, 16 of the deceased are stated to have attained ages from 97 to 105 years; but no information is given as to the distribution of those 16 persons into or among those last nine years of age.—*Milne.*

In 1827 Dr. Emerson pub. a very full summary of the results recorded by the B. of Mort. for the City of Philadelphia during a period of 20 years. [MORT. OBS.]

In 1829 Mr. James J. Duncan pub. *Tables of the Prob. and Expectation of Male and Female Life in Glasgow; and of the Value of Annu. on Single Lives at all Ages, distinguishing the Sexes, etc., deduced from the Glasgow Pop. and Mort. Bills, on an Average of 6 Years, 1821–7.* [GLASGOW, MORT. T. FOR.]

In 1832 Mr. Marshall pub. *Mort. of the Metro.: a Statistical View of the Number of Persons reported to have Died, of each of more than 100 kinds of Disease and Casualties, within the B. of Mort. in each of the 204 Years 1629–1831.*

Here is a copy of B. of Mort. from 11th Dec., 1832, to 10th Dec., 1833:

Abscess	131	Hooping-Cough	1040
Age and debility	2952	Hydrophobia	4
Apoplexy	442	Indigestion	9
Asthma	1265	Inflammation	2607
Cancer	105	———— of the Bowels and Stomach	499
Childbirth	275	———— of the Brain	236
Cholera	1150	———— of the Lungs and Pleura... ..	548
Consumption	4355	Influenza	135
Constipation of the Bowels	26	Insanity	142
Convulsions... ..	2140	Jaundice	55
Croup... ..	151	Jaw-locked	6
Dentition, or Teething	473	Liver, Diseased	302
Diabetes	6	Measles	524
Diarrhoea	19	Miscarriage... ..	20
Dropsy	860	Mortification	241
Dropsy on the Brain	860	Paralysis	212
Dropsy on the Chest	100	Rheumatism	37
Dysentery	5	Scrofula	19
Epilepsy	28	Smallpox	574
Erysipelas	82	Sore Throat and Quinsy... ..	57
Fever	530	Spasms	79
———— intermittent, or Ague	13	Stone and Gravel	91
———— Scarlet	481	Stricture	16
———— Typhus	100	Thrush	109
Fistula	3	Tumour	43
Gout	53	Venereal	6
Hemorrhage	42	Worms	2
Heart, Diseased	145	Unknown Causes	887
Hernia	29	Stillborn	934

CASUALTIES:

Drowned	108	Killed by various Accidents	169
Died by visitation of God	39	Murdered	4
Excessive Drinking	5	Poisoned	6
Found Dead	8	Suicides	55

CHRISTENED { Males	13,553	BURIED { Males... ..	13,319
{ Females... ..	13,537	{ Females	13,258
Total... ..	27,090	Total	26,577

OF THE NUMBER BURIED WERE:

Stillborn	934	Sixty and under 70... ..	2551
Under two years of age	6261	Seventy and under 80	2043
Two and under 5 years	2805	Eighty and under 90	802
Five and under 10	1145	Ninety and under 100	107
Ten and under 20	970	One Hundred	3
Twenty and under 30	1700	One Hundred and One	1
Thirty and under 40	2225	One Hundred and Two	1
Forty and under 50	2615	One Hundred and Three... ..	1
Fifty and under 60... ..	2412	One Hundred and Four	1

Decrease in burials reported this year, 2029.

The ann. bill for 1833 gave the christenings at 27,090, and the burials at 26,577. Out of these the causes of death were returned as "unknown" in 887, or 1 in 30. The character of the bills was sadly changing for the worse about this period. As early as 1823 St. George's, Hanover-square, had ceased to make any returns. In 1832 the parishes of All Saints', Poplar, and St. John's, Wapping, followed its example; and in 1834 the clerks of St. Bartholomew's the Less, and St. George's, Queen-square, became defaulters. The Co. of Parish Clerks had no authority by which they could make these contumacious parishes supply correct or indeed any information.

A writer in the *Companion to the Almanack*, for 1835, pointed out, that in order to have these interesting records made perfect, or nearly so, it would be requisite that the cause of each death should be certified by a well-educated practitioner; and to qualify him for doing this, an anatomical examination of the body would be necessary in many or most cases. The friends of the deceased (he adds) would thus have an opportunity of comparing the physician's diagnosis given during life with the actual appearances found after death; and the check thus afforded to careless practice, or vague diagnosis, would advance medicine in a very material degree. The first step towards the change he desired was close at hand.

Consequent upon the increasing inaccuracy of the then existing B. of Mort., and perhaps even more upon the advancement of medical science towards a proper classification of the causes of death, while the increasing education of the people constantly pointed to scientific advancement, the attention of the legislature became directed to the subject of an improved system of returns for the births, marriages, and deaths of the entire pop. At length, in 1836, there was passed the GENERAL REGISTRATION ACT, which inflicted a death-blow upon the old B. of Mort., rapidly raising up a more perfect system in its stead. This will be spoken of at large under REGISTRATION.

At the foot of the B. of Mort. issued by the Co. of Parish Clerks in 1837 was the following notice:

By the operation of the new Regis. Act, much difficulty has occurred in obtaining the reports of christenings and burials, in consequence of which, in some parishes, the reports have been wholly withheld; and in those of several other parishes, where the office of searcher has been discontinued, the disease of which deaths have taken place has been necessarily omitted.

All such were therefore added to the deaths from "unknown causes."

Mr. Milne, in his famous art. in the *Encyclo. Brit.*, pub. about 1837, offered the following general recommendations concerning the form, scope, and period to be comprised in B. of Mort.:

1. The form for the births should be such that the sexes are distinguished, and the born alive from the stillborn. The number of marriages should be stated. The deaths of the two sexes should be shown under 1 year; from 1 to 2, from 2 to 5, and then in intervals of 5 years, up to 100, over which all deaths should be shown separately, and the sex stated.

2. The value would be greatly enhanced by inserting in them the contemporaneous wages of labourers in agriculture, and of the workmen employed in the more common kinds of trade and manufacture carried on among the people they relate to; also the prices of the necessities of life which persons of these descriptions consume the most of, together with anything uncommon in the seasons or the crops, and every material change in the circumstances of the people.

3. A bill should be pub. for each year separately, to show how the rates both of mort. and fecundity vary with the circumstances of the people in different years; and from these yearly bills others can be derived for longer periods.

The Reg.-Gen. Report for 1838 gave the deaths of the year, at each age, for the whole of *England and Wales*. This was but an indication of the efficiency which these reports were destined speedily to attain. The want of such returns for *Scotland and Ireland* then forced itself strongly to the front.

It appears to have been considered desirable not to let the old system of a weekly B. of Mort. die out. Accordingly the matter was taken in hand by the Reg.-Gen., who, with the machinery of the Gen. Regis. Office at his command, could supply a true statement, capable of being a guide to the prob. in cases of serious epidemic, and otherwise. The first Bill of the new series was accordingly pub. for the week ending 11th January, 1840. The area of the new bill was enlarged, and included many districts which were never even contemplated by the old bills. The total area embraced was now extended to 46,858 acres. At the close of the present paper we shall give some details of the parishes and districts included. A return of the weekly births was not included in the new bills until 1845.

In 1843 Mr. Edwin Chadwick read before the Sta. So. a paper *On the Best Modes of Representing Accurately, by Statistical Returns, the Duration of Life, and the Pressure and Progress of the Causes of Mort. amongst Different Classes of the Community, and amongst the Pop. of Different Districts and Countries*; and the same is printed in vol. vii. of the *Journ.* The main object of this paper was to illustrate the errors created and maintained by taking the proportions of deaths as exponents of the average ages at death; or of the chances of life to the pop. It will be referred to under other heads in this work.

In this year several large parishes on the south and south-west sides of Lond. were added to the bills—the area of which now extended to 58,553 acres.

In 1846 considerable add. were made to the bills, by including Hampstead on the north, and Lewisham, Plumstead, Eltham, etc. on the south; extending the area to 78,029 acres. The pop. within this area in 1841 was 1,872,365.

In 1852 Mr. W. R. Wilde, Assistant Census Commissioner in Ireland, read before the Sta. Sec. of the Brit. Asso. at Belfast, *A Short Account of the Early B. of Mort. in Dublin*, from which we have already quoted.

In 1854 Mr. John Angus, of the Gen. Registry Office, read before the Statis. So. a paper: *Old and New B. of Mort; Movement of the Pop.; Deaths and Fatal Diseases in Lond. during the last Fourteen Years*; and the same is printed in *Statis. Journ.* xvii., p. 117. The author says:

To the plague the public of Lond. owed their bills of christenings and burials; to the acknowledged value of such records in connexion with the property of individuals, and only in a second degree to the knowledge of their importance in political arithmetic, we are indebted for the present system of regis. of births, deaths, and marriages. This is another illustration of a natural law, by which contrivances to which men are led by fear, love of property, or other powerful impulses of the mind, become fertile in new suggestions, and subserve innumerable uses, which enrich the storehouse of knowledge and dispense incalculable benefit to mankind.

The expression "within the B. of Mort." is still not unfrequently employed. The late Sir Richard Mayne, Chief of the Metropolitan Police, said before a Parl. Committee in 1862, that he had often tried to ascertain what the limits of the B. of Mort. were. He had sent to the Board of Works, to the Board of Health, and to Dr. Farr—three very likely places, but none of them knew! It surely must mean within the entire range of the parishes included in the Bills "for the time being"—expanding, therefore, as new parishes are embraced.

In the *Medical Record* (New York) for Sept., 1871, there was an art. on B. of Mort. by Dr. S. H. Dickson.

Before closing this paper, we must say a few words concerning the present B. of Mort. issued weekly in Lond. We have the bill last issued before us; *Weekly Return of Births and Deaths in Lond. and in Twenty other Large Towns in the United Kingdom*. By authority of the Reg.-Gen., pub. by Eyre and Spottiswoode, 9, East Harding-street, Fetter-lane, Lond., E.C. No. 15, 1872, vol. xxxiii. Week ending Saturday, April 13. Price 1d. This is the heading. Then follow contents of the bill, of which we can only give a running abstract:

Reg.-Gen. Office, Somerset House, 15 April, 1872. *United Kingdom*.—During the week ending Saturday, the 13th inst., 5800 *births* and 3712 *deaths* were regis. in Lond., and twenty other large cities and towns of the U.K. The aggregate mort. from all causes in these towns was at the rate of 26 deaths ann. to every 1000 persons estimated to be living.

In *Edinburgh* the ann. rate of mort. was 31 p. 1000 persons living; in *Glasgow*, 33 p. 1000; and in *Dublin*, 42; the fatal cases of smallpox in Dublin, which had been 67 and 44 in the two previous weeks, rose to 83 last week, and were equal to an ann. death-rate of 14 p. 1000.

Eighteen Large English Towns.—The ann. rates of mort. last week in the eighteen English cities and towns were as follows: . . .

Lond.—In Lond. 2574 *births* and 1470 *deaths* were regis. last week. After making due allowance for increase of pop., the births exceeded by 259, while the deaths were 170 below, the average numbers of the corresponding week of the last ten years. The ann. death-rate from all causes, which in the two previous weeks had been equal to 26 and 25 p. 1000, further declined last week to 23. The rate was 21 in the west, 23 in the north, 24 in the central, 24 in the east, and 23 in the south groups of districts.

The 1470 deaths included 49 from smallpox. . . .

The mean temperature last week was 51°·4 and 60°·3 above the average; an excess was shown on each day. . . .

The deaths referred to diseases of the respiratory organs, including phthisis, were 458 last week, against 597 and 505 in the two preceding weeks. . . .

To different forms of violence 50 deaths were referred. . . .

Indian Cities.—In Bombay. . . . In Madras. . . . In Calcutta.

Foreign Cities.—In Paris 814 deaths were returned in the week ending last Friday, and the ann. death-rate was equal to 23 p. 1000 of the estimated pop. . . .

In the City of New York 655 deaths were regis. in the week ending 23 March, and the equivalent ann. rate of mort. was 36 p. 1000.

Meteorology.—At the Royal Observatory, Greenwich, the mean reading of the *barometer* last week was 29·97 in. . . .

The mean temperature in the other large English towns furnishing returns ranged from . . .

According to returns furnished by the engineer of the Metropolitan Board of Works, the daily average quantity of sewage pumped into the river Thames at Crossness was 213,147 cubic metres, and at Barking 292,032 cubic metres, equivalent to about as many tons by weight.

Then follow the tables:

1. LONDON.—*Births* and *deaths* regis. last week, and in the 15th week of ten previous years.
2. LONDON.—Comparative table of results in the last 13 weeks.
3. Births and deaths regis. and meteorology during the week ending Saturday, the 13 day of April, 1872, in the following large towns.
4. Deaths and rate of mort. in 18 large English towns, and in Dublin, during the week ending Saturday, 13 April, 1872.
5. Deaths in Lond. regis. in the 15th week of the year 1872 [causes of death specified in relation to certain groups of ages].
6. LONDON.—Pop., births, deaths from all causes, and from smallpox, measles, scarlet fever, diphtheria, whooping cough, fever, diarrhoea, violence, etc., regis. in each sub-district during the week ending Saturday, 13 April, 1872. [The districts containing *workhouses*, *hospitals*, and *lunatic asylums* are marked by letters indicating the fact. These districts (of which there are 137) do not follow the parish boundaries of the old bills.]
7. Meteorological obs. taken at the Royal Observatory, Greenwich, during the week ending Saturday, 13 April, 1872 [embracing "phases of the moon," "barometer," "readings of thermometers," "difference" "degrees of humidity, etc.," "wind," "rain," "electricity," "sky and atmosphere," "notes."]

The document extends over 8 pages, the size of this work, and may be pronounced to be a *perfect bill*, embracing all the sound recommendations of all the preceding writers.

Regarding the Bills of the old Co. of Parish Clerks—they have ceased; but the Co. itself remains, and deserves to be cherished in our remembrance. The difficulties referred to at the foot of the Bill for 1837 increased, as it was but natural they should. The Corp. of Lond. withdrew the allowance it formerly made towards the expense of the Bills. The Co. bowed to decrees it could in no wise control. We have recently visited the old Hall; it is solemn as of yore, and even more silent; but it is not deserted. The printing press is indeed broken up; the printer has long since closed up his last “forme”; but the Master and Wardens (whose courteous reception and frugal hospitality we have to acknowledge) now devote their limited income to the good work of *charity*; to relieving the poor of that useful fraternity of whom the Co. was orig. composed, and but for whose early labours life ins. might have remained, as for centuries it was, a subject of speculative uncertainty. The B. of Mort. forms the base on which the science of *life contingencies* has been reared; and on the Co. of Parish Clerks, for several centuries, rested the responsibility of furnishing that Bill.

[It has prob. happened that some of the compilations spoken of in this art. are not strictly B. of MORT., but rather come under the designation of PARISH REGIS. or MORT. OBS. The indistinctness of the early writers on this point we find extremely confusing. Under DEATHS, CAUSES OF, other special forms of Bills will be given. Under MORT. OBSERVATIONS, other special details will be noted, as also under PAROCHIAL REGIS.; while under PLAGUES will be found special reference to the Bills at the period of PLAGUES.]

BILL OF PARCELS.—An account given by the seller to the buyer, containing particulars of the goods bought, and of their price.

BILL OF SALE.—An assignment by deed of personal chattels. The instrument may be absolute or conditional.

BILL OF STORE.—A licence granted at the Custom-house to merchants to carry such stores and provisions as are necessary for a voyage, custom free, authorized by 3 & 4 Wm. IV., c. 52 (1833).

BILL OF SUFFERANCE.—A licence granted to a merchant to suffer him to trade from one English port to another without paying custom.

BINARY ARITHMETIC (counting by twos).—A species of arithmetic invented by the renowned Leibnitz about 1703. It is founded on the shortest and simplest progression, viz. that which terminates with the second cipher. In the binary notation, therefore, only two characters are required, 1 and 0, the zero having the power of multiplying the number it follows by two, as in the common notation it multiplies by ten. The No. *one* is represented by 1; *two* by 10; *three* by 11; *four* by 100; *five* by 101; *six* by 110; *seven* by 111; *eight* by 1000; *nine* by 1001; *ten* by 1010, etc. This method of notation, though it may be applied with advantage in the investigation of some properties in numbers, is inconvenient for common purposes, on account of the great number of characters required, even when the numbers to be expressed are small.—*Brande*.

BINOMIAL ROOT, in Algebra, composed of only two parts connected with the signs *plus* or *minus*. The term was first used by Recorda, in his Algebra, pub. about 1550. The celebrated *binomial theorem* of Newton was first mentioned in 1688.—*Hutton*.

BIOLOGY, from the Greek, signifying *an account of life*.—Another term for signifying Physiology, or the Doctrine of Life. This term was used by Treviranus, of Bremen, in his work on Physiology, pub. 1802–22. Biology includes zoology, anthropology, and ethnology.—Herbert Spencer's *Principles of Biology*, pub. 1865–67.

BIRCH, DR., formerly Sec. and Historian of the Royal So.—He is generally reputed to have been the compiler of a *Collection of the Yearly B. of Mort.* pub. anonymously in 1759, and containing, in add. to reprints of Graunt's, Petty's, and Corbyn Morris's pubs., “A comparative view of Diseases and Ages,” the materials for which are stated to have been supplied by Dr. Heberden; and there was also a T. of Prob. of Life, calculated by James Postlethwayt, Esq. It appears from personal inquiries made by Mr. Milne during the present century of the son of Dr. Heberden, that Dr. Birch cannot have done more than superintend the work through the press—in the case of such a work not a very easy duty, if carefully discharged, as it was. The work indeed is a credit to all concerned. [HEBERDEN.]

BIRD, EDWARD, Man. of F. Department of *Royal Exchange* from 1830 to 1865. He entered the office in 1802, and passed through the various departments, until he reached the position named. He retired in 1865, having been employed during a period of 63 years in the Corp. He died on 3rd Sept., 1871, in his 85th year.

BIRD, JAMES A., was Sec. of *Official and General* in 1853.

BIRKBECK LIFE ASSU. CO., founded in 1852, with an authorized cap. of £10,000—afterwards increased to £100,000—in shares of £1, “to be paid in full, leaving no further liability.” The prosp. said: “This asso. has two distinct departments: one comprising all the transactions of a Life Assu. Co.; the other, that of a friendly so., for assu., relief, maintenance or endowment of members and their kindred, and for the frugal and profitable investment of savings.” Again:

To a vast proportion of us life assu. presents the only means by which we can effectually discharge the duties of brothers, sons, husbands, and fathers. That it is of the utmost importance to all will be

readily admitted by those who have seen the results of improvidence; the sorrows, sufferings, and sins of the unprovided; and the bitterness of the dying hour disturbed by reflections upon the unprotected condition of those who speedily become widowed or fatherless. . . . The B. Life Assu. Co. is, by its peculiar economy and organization, expressly adapted to become the certain and safe resource of all such struggling self-dependent men as will subject themselves to a small present payment, in order that they and their families may in any event be secured against destitution and degradation; and is particularly applicable to the circumstances of members of the Civil Service, who, in the majority of cases, are unable to make provision for their families except by ins.

The following were among the special features of the Co.: "No forfeiture in case of disability to continue payment after 3 years' prems. have been paid." "Policies are payable immediately on proof of the death of the insured." "The age and insurable interest of the assurer are admitted on every pol." "Pol. may be trans. by indorsement," etc. Finally:

The mechanics' institutes and literary institutions spread over the Brit. dominions afford between 600 and 700 local centres whence the *Birkbeck L. Assu. Co.* is enabled to diffuse the advantages of the most notable device of our time for improving the tenure of human existence. It is therefore thought that this inst. may appropriately bear the name of the great public benefactor who laboured most successfully to improve the people by creating and gratifying the nobler feelings and capacities of our nature.

Among the trustees of the Co. was William Makepeace Thackeray; while at one period Douglas Jerrold was the Chairman, and Blanchard Jerrold the Sec. Mr. Thomas Walker, B.A., was the Act.

By the year 1854 the Co. had acquired a very fair bus. connexion, chiefly of the industrial class. It issued in that year pol. ins. £86,724 3s. 9d., and it paid a div. of 5 p.c.

In 1857 the bus. was trans. to the *Home Counties Life*; and in the same year the joint bus. was trans. to the *Whittington*.

BIRKMYRE, W. F., the late, was trained in the office of the *North British* under Mr. Chisholm. In 1861 he was appointed Man. of the L. department of the Lond. branch of that Co. In 1863 he was appointed Act. and Man. of the *City of Glasgow L.* He died at an early age in 1864. Mr. Birkmyre was an American by birth. He held diplomas from the Inst. of Act. and from the Faculty of Act. He was employed to make the calculations under which the Hartley Colliery Fund was finally distributed.

BIRMINGHAM.—This town, which is near the centre of England, and may be said to be the very centre of the metal trade of Gt. Brit., has no very remarkable ins. hist. Several respectable ins. offices have been founded here, and many of the leading offices have branches. There is an efficient fire brigade, consisting of engines supplied by various ins. offices—the *Norwich Union* engine is under very efficient management. In the 9th report of Reg.-Gen. (1849) will be found some remarkable statistics regarding fluctuations in the number of marriages, consequent upon the depression or advancement of trade. In 1700 Birmingham consisted of 2504 houses, with a pop. of 15,032. The pop. in 1871 was 344,980. The death-rate p. 1000 of the pop. for the last 5 years has been as follows: 1867, 25·6; 1868, 25·9; 1869, 23·1; 1870, 23·0; 1871, 24·9.

In 1857 Mr. Thomas Green, M.R.C.S., read before the Social Science Congress, a paper: *The Mort. of Birmingham Compared with that of Lond. and Seven other Towns*. The tables extended over a period of 18 years. Birmingham, during that period, contrasted favourably in point of health with Liverpool, Manchester, and Wolverhampton; but unfavourably with many other places, including Lond. The author says hereon:

It appears that during the last 7 years there have been in Birmingham 3444 deaths—being an ann. average of 492 more than there would have been if the death-rate had been the same as that of Lond. for the same period.

The death-rate of Birmingham during the preceding 7 years, in relation to some of the adjacent towns, had been as follows:

Birmingham	...	...	26·79 per 1000	Walsall	...	...	...	26·76 per 1000
Aston	...	...	22·47	West Bromwich	...	...	25·69	"
Wolverhampton	...	...	28·54	Dudley	...	...	25·97	"

The paper is brief, but practical.

In 1865 Mr. W. L. Sargant read before the Brit. Asso. a paper: *On the Vital Statistics of Birmingham and Seven other Towns*. An abstract of the paper is given in the *Trans.* of the Asso. for that year. We shall speak of the paper under V. STATISTICS.

BIRMINGHAM ALLIANCE FIRE INS. CO., LIM., founded in Birmingham in 1864, with an authorized cap. of £500,000, in 20,000 shares of £25. The Co. was promoted under the auspices of the Birmingham Financial Co., and at once took a respectable position. In 1864 its duty return amounted to £657 9s. 2d.: in 1865 it reached £1506; by 1868 it had reached £1906 11s. 2d. In 1867 the Co. took the name of the *Birmingham Fire Ins. Co.*; and in 1870 its bus. was united with that of the *Lancashire*.

BIRMINGHAM ALLIANCE LIFE INS. CO., LIM., founded in Birmingham in 1865, with an authorized cap. of £500,000, in 20,000 shares of £25. The Co. was founded upon the basis of the bus. of the *Birmingham and Midland Life*, estab. 1862; but branches for accident and fidelity guar. were added. The Co. made steady progress. In 1867 it trans. the accident portion of its bus. to the *Accident Co.* (No. 1), and about the same period its guar. bus. to the *European*. In 1870 the name of the Co. was changed to *Lond. and Birmingham Assu. Co., Lim.*, where its hist. will be continued. Mr. J. Barclay Bannerman was Gen. Man. and Sec. of the Co.

BIRMINGHAM DISTRICT FIRE INS. CO., founded in Birmingham in 1834; and in 1851 it took the name of the *District Fire*, under which title we shall speak of it more at large. [DISTRICT FIRE INS. CO.]

BIRMINGHAM FIRE INS. CO., LIM.—See BIRMINGHAM ALLIANCE FIRE INS. CO.

BIRMINGHAM FIRE OFFICE CO., founded at Birmingham in 1805, with a cap. of £300,000, in 1200 shares of £250 each. In 1810 it obtained a special Act of Parl., 50 Geo. III. c. xc., *An Act to enable the Birmingham Fire Office Co. to sue in the name of their Sec.* The Act was not to incorp. the Co. In 1824 the Co. collected in fire duty £5161; in 1834, £7042; 1844, £10,196; 1854, £14,233; 1864, £14,992.

The Co. was one of great respectability. In 1867 its bus. was trans. to the *Lancashire*.

BIRMINGHAM AND GENERAL.—This Co. was projected in Birmingham in 1854, and went through all the stages up to complete regis., after which we lose sight of it.

BIRMINGHAM LIFE ASSU. AND ANNU. OFFICE, founded at Birmingham in 1810, and worked, we believe, in connexion with the *Birmingham Fire Office*, founded in 1805. In 1810 the Co. obtained a special Act, 50 Geo. III. c. lxxxix., *An Act to Enable the Birmingham Life Assu. and Annu. Office to Sue in the Name of their Sec., and to inrol Annu.* The Act was not to extend to incorp. the Co.

The bus. of the Co. was small; and in 1826 the Co. ceased to carry on the same. Its pol. were trans. to *Provident Life*, before any material loss had occurred. The Co. paid the *Provident* a cash consideration for taking over the risks.

BIRMINGHAM AND LOND. ASSU. ASSO.—This Co. was promoted in 1853 by Mr. William Sweeney, Con. Act. We believe the title was afterwards changed to *London and Birmingham*. The project did not go forward.

BIRMINGHAM AND MIDLAND COUNTIES INS. CO.—An Ins. Co. under this title was projected in 1850 by Mr. E. Oliver, of 6, Temple Row, Birmingham, solicitor, and 6 others, and was completely regis.; but we hear no more of it.

BIRMINGHAM AND MIDLAND LIFE INS. CO., founded in Birmingham in 1862, with an authorized cap. of £100,000 in 20,000 shares of £5 each, £1 paid. In 1865 the Co. merged into the *Birmingham Alliance Life*. Mr. J. B. Bannerman was Act. and Sec. of the Co.

BIRT, S., pub. in 1737: *Essay to Ascertain the Value of Leases, etc.*

BIRTH.—The act of coming into life.

BIRTHS.—Many problems regarding births come before actuaries; many more will arise when the next phase of life ins.—that of making a complete provision for *prospective families* at the time of marriage—shall develope itself. The exact knowledge required by the office before embarking on such an enterprise is accumulating. These increasing facts in the mean time are useful in that not unfrequent branch of business—*Ins. against Issue*.

It was in 1661 that Graunt, in his *Natural and Political Observations*, etc., made his famous observation, "that the more sickly the years are, the less fecund or fruitful of children they also be," which (he continued) "will appear if the number of children born in the said sickly years be less than that of the years both next preceding and next following; all which upon view of the tables will be found true, except in a very few cases, where sometimes the precedent and sometimes the subsequent years vary a little, but never both together. Moreover, for the confirmation of this truth, we present you the year 1660, when the burials were fewer than in either of the two next precedent years by 2000, and fewer than in the subsequent by above 4000. And withal, the number of christenings in the said year 1660 was far greater than in any of the three years next aforegoing."

He (Graunt) made many most interesting and sagacious obs. For instance, he was the first to discover that there were more *males* than *females* born; but he does not appear to have surmised that female life was of longer duration than male life, and that from this cause there were always more females than males living; indeed, he was led to an entirely opposite conclusion. But his remarks are full of originality, and always suggestive. He says:

The next obs. is that there be more males than females. 1. There have been buried from the year 1628 to the year 1662 exclusive, 209,436 males, and but 190,474 females. But it will be objected that in Lond. it may be indeed so, though otherwise elsewhere, because Lond. is the great stage and shop of business, wherein the masculine sex bears the greatest part. But we answer that there have been also christened within the same time 139,782 males, and but 130,866 females, and that the country accounts are consonant enough to those of Lond. upon this matter. 2. What the causes hereof are we shall not trouble ourselves to conjecture, as in other cases, only we shall desire that travellers would inquire whether it be the same in other countries.

He follows up the subject:

We have hitherto said that there are more males than females; we say next, that the one exceeds the other by *about a thirteenth part*. So that although more men die violent deaths than women, that is, more are slain in wars, killed by mischance, drowned at sea, and die by the hand of justice; moreover, more men go to colonies, and travel into foreign parts than women; and lastly, more remain unmarried than of women, as Fellows of Colleges, apprentices above 18, etc., yet the said thirteenth part difference bringeth the business but to such a pass that every woman may have a husband, without the allowance of polygamy. Moreover, although a man may be prolific 40 years, and a woman but 25, which makes the males to be as 560 to 325 females, yet the causes above named, and the later marriage of men, reduce all to an equality.

Again :

It appearing that there were 14 men to 13 women, and that they die in the same proportion also ; yet I have heard physicians say that they have two women patients to one man, which assertion seems very likely. . . . Now from this it should follow that more women should die than men, if the number of burials answered in proportion to that of sicknesses ; but this must be solved, either by the alledging that the physicians cure those sicknesses, so as few more die than if none were sick ; or else that men being more intemperate than women die as much by reason of their vices as women do by the infirmity of their sex ; and consequently more males being born than females, more also die.

He found out—or imagined that he found out—that the proportions of males to females born varied in different districts ; for at Cranbrook (he says) there be 20 males for 19 females ; in Hantshire [Hampshire] 16 for 15 ; in Lond. 14 for 13 ; and at Tiverton 12 for 11.

Graunt, reviewing the proportion of births in Lond. compared with the country, arrived at the conclusion that “the breeders in Lond. were proportionably fewer than those in the country,” and that the difference arose from reasons of which the following is the substance :

1. All that have business to the Court of the King, or to the Courts of Justice, and all country-men coming up to bring provisions to the City, or to buy foreign commodities, manufactures, and rarities, do for the most part leave their wives in the country.
2. Persons coming to live in Lond. out of curiosity and pleasure, as also such as would retire and live privately, do the same, if they have any.
3. Such as come up to be cured of diseases, ditto.
4. That many apprentices of Lond. who are bound seven or nine years from marriage, do often stay longer voluntarily.
5. That many sea-men of Lond. leave their wives behind them, who are more subject to die in the absence of their husbands.
6. Causes of general unhealthiness.
7. As to the causes of barrenness in Lond., I say, that although there should be none extraordinary in the native air of the place, yet the intemperance in feeding, and especially the adulteries and fornications, supposed more frequent in Lond. than elsewhere, do certainly hinder breeding.
8. Add to this, that the minds of men in Lond. are more thoughtful, and full of business, than in the country, where their work is corporal labour and exercises ; all which promote breeding, whereas anxieties of the mind hinder it.

In 1682 Sir William Petty pub., *An Essay Concerning the Multiplication of Mankind*, wherein he proposed to consider “How many men and women are prolific, and how many of each are married or unmarried.” We shall have occasion to speak of this essay more at large under POPULATION.

In 1683 he pub. *Another Essay in Political Arithmetic, Concerning the Growth of the City of Lond. ; with the Measures, Periods, Causes, and Consequences thereof* ; wherein he starts the proposition, “That it is possible to increase mankind by generation *four times more than at present*.” Then he proceeds to measure the period in which the “people double,” by estimating the *excess of births over the burials*. Here is a specimen of his method :

I might here insert, that although the births in this last computation be 25 of 600, or a twenty-fourth part of the people, yet that in the natural possibility they may be near thrice as many, and near 75. For that by some late obs., the teeming females between 15 and 44 are about 180 of the 600, and the males of between 18 and 59 are about 180 also, and that every teeming woman can bear a child once in two years ; from all which it is plain that the births may be 90 (and abating 15 for sickness, young abortions, and natural barrenness), there may remain 75 births, which is an eighth of the people ; which by some obs. we have found to be but a two-and-thirtieth part, *or but a quarter of what is thus shown to be naturally possible*. Now according to this reckoning, if the births may be 75 of 600, and the burials but 15, then the ann. increase of the people will be 60, and so the 600 people may double in 10 years, which differs yet more from 1200 above-mentioned. Now to get out of this difficulty, and to temper those vast disagreements, I took the medium of 50 and 30 dying p.a., and pitch'd upon 40 ; and I also took the medium between 24 births and 23 burials, and 5 births and 4 burials, viz., allowing about 10 births for 9 burials ; upon which supposition there must die 15 p.a. out of the above-mentioned 600, and the births must be 16 and two-thirds, or five-thirds of a man ; which number compared with 1800 thirds, or 600 men, gives 360 years for the time of doubling—including some allowance for wars, plagues, and famine, the effects whereof, though they be terrible at the times and places where they happen, yet in a period of 360 years is no great matter in the whole nation.

In 1686 (perhaps the first ed. a year or two earlier) he pub., *Observations upon the Dublin B. of Mort., 1681, and the State of that City*, wherein he asserts, as another proposition, “*That the Births are the best way (till the accompts of the people shall be purposely taken) whereby to judge of the Increase and Decrease of People ; that of burials being subject to more contingencies and variety of causes.*” Upon this he proceeds :

If the births be as yet the measure of the people, and that the births (as has been shown), are as 5 to 8, then eight-fifths of the births is the number of the burials, where the year was not considerable for extraordinary sickness or salubrity ; and is the rule wherby to measure the same, as for example : The medium of the births in *Dublin* was 1026, the eight-fifths whereof is 1641, but the real burials were 1644 ; so as in the said years they differed little from the 1641, which was the standard of health ; and consequently the years 1680, 1674, and 1668, were sickly years, more or less, as they exceeded the said number 1641 ; and the rest were healthful years, more or less, as they fell short of the same number. But the city was more or less populous, as the births differed from the number 1026, viz., populous in the years 1680, 1679, 1678, and 1668 ; for other causes of this difference in births are very occult and uncertain. What hath been said of *Dublin* serves also for *Lond.*

Regarding the excess of *males over females*, he says, “It hath already been observ'd by the Lond. Bills, that there are more males than females. It is to be further noted, that in these 6 Lond. Bills also, *there is not one instance, either in the births or burials, to the contrary.*” Then again, confirming the view of Graunt [it has been said, without

foundation, that Petty and Graunt were one and the same], "It hath been formerly observ'd, that in the years wherein most dye, fewest are born, and *vice versâ*. The same may be further observed in males and females, viz., *when fewest males are born, then most dye.*"

On the question of the proportions of male and female births, there was a good deal of speculation by the older writers. Goodman, early in the 17th century, supposed that more females than males were born. Turgot (French) speculated the other way, and was correct; but he does not appear to have founded his statement upon any data, and it must be regarded only as a guess. Herder (German), writing as recently as 1785, takes for granted that the proportions were about equal. Dr. John Arbuthnot, in his book *Of the Laws of Chance*, etc., pub. 1692, was one of the first writers who treated of the subject in a really philosophical manner [*Phil. Trans.*, No. 328]. He had made himself fully acquainted with the fact that the male births predominated.

M. Nicolas Bernouilli collected from T. of Obs. [B. of Mort. ?] continued for 82 years—1629 to 1711—that the number of births in Lond. was at a *medium* about 14,000 yearly; and further, that the number of *males*, in relation to the number of *females*, was nearly 18 to 17. Still he seemed to think that *chance*, rather than Divine decree, played a part in this incident of production. We confess we think his own argument points the other way. He says: "Let 14,000 dice, each having 35 faces—18 white and 17 black—be thrown up, and it is great odds that the number of white and black faces shall come as near, or nearer to each other, as the number of boys and girls do to the tables." His reasoning on this subject is contained in his two letters to M. de Montmort, dated Lond. 11 Oct., 1712; the other, Paris, 23 Jan., 1713, pub. in the Appendix to the *Analyse des Jeux de Hazard*, 2nd ed. His cousin Daniel Bernouilli returned to the same subject. We have noted *his* views in our biographical notice of him.

In 1695 the 6 & 7 of Wm. & Mary, c. 6, was passed; and this was the first legislative measure which provided for the regis. of *Births*. Its provisions were strict. They were not, however, conceived for the good of the people, but to serve the fiscal necessities of the State. *Births were subjected to a tax*, and the records were to be kept exact, in order that the full measure of the tax might be exacted. [MORTALITY TAX.]

In *Natural and Political Obs. and Conclusions upon the State and Condition of England*, written by Gregory King, Lancaster Herald, in 1696 [but only pub. as an appendix to an ed. of *Chalmers' Estimate* in 1802], we find many curious statements regarding the births of the people, and the following we regard as worthy of special note, as exhibiting the notions of the best-informed men of that period. He says, "the yearly births of the kingdom being 190,000 souls, those under 1 year old are in all 170,000:—males 90,000; females 80,000." In regard to the proportions of the sexes at birth he was nearly right. He makes up his total as follows:

ANN. BIRTHS.	-Lond. B. of Mort.	...	...	1 in 26½ [of living.]	In all	...	20,000
"	The Cities and Market Towns	...	1 " 28½	"	In all	...	30,600
"	The Villages and Hamlets	...	1 " 29¼	"	In all	...	139,400
				1 in 28.85	190,000		

He next found "that in 1000 co-existing persons":

There are 71 or 72	Marriages in the Country,	producing 34.3 Children.
" 78	Marriages in Towns	" 35.2 Children.
" 94	Marriages in London	" 37.6 Children.

Whereby it follows:

1. That though each marriage in Lond. produceth fewer people than in the country, yet Lond. in general, having a greater proportion of breeders, is more prolific than the other great towns; and the great towns are more prolific than the country. 2. That if the people of Lond., of all ages, were as long-lived as those in the country, Lond. would increase in people much faster pro rata than the country. 3. That the reason why each marriage in Lond. produces fewer children than the country marriages seems to be: (1). From the more frequent fornications and adulteries. (2). From a greater luxury and intemperance. (3). From a greater intensesness to business. (4). From the unhealthiness of coal smoke. (5). From a greater inequality of age between the husbands and wives.

And that it may appear what the effect is, of the inequality of ages in married couples, I have collected the following obs. from a certain great town [Lichfield] in the middle of the kingdom, consisting of near 3000 souls. 1. That there is no child of any parents now living in the said town where the wife is 17 years older than the husband, or the husband 19 years older than the wife. 2. That the whole number of children being 1060, the number of those whose mother was older than the father is 228, and where the husband was older than the wife, 832. 3. That one moiety of the whole number of children in the said town is the product of such parents where the husband is 4 or more years older than his wife. 4. That the greater number of children, with respect to any one number of years of difference in age between the husband and wife, is where the husband is 2 years older than the wife, the product whereof is 147, or a seventh part of the whole. 5. That an equality of age in the husband and wife is not so prolific as an inequality, provided that inequality exceed not a superiority of 4 years in the wife, or 10 years in the husband; for the equality of years produced but 23 children; whereas 1 year's inequality in the age of the parents, either way, produced above 60. 6. That of the said 1060 children in the whole town, nearly three-quarters of them are the product of coalitions from 2 years' superiority of age in the wife inclusive, to 6 years' superiority of age in the husband inclusive. 7. That the highest powers in men and women for procreation is, in that town, at 31 years of age in the husband, and 28 in the wife; the produce of the former being 86 children, and of the latter, 83. 8. That one moiety of the said 1060 children are the product of fathers from 28 to 35 years of age inclusive, and of mothers, from 25 to 32. Whence it follows that a just equality, or too great an inequality of age in marriages, are prejudicial to the increase of mankind; and that the early or late marriages in men and women do tend little to the propagation of the human race. *Lastly*. From a

consideration of the male and female children in the said town, and the ages of their parents at the time when such children were respectively conceived, a scheme may be estab. of the powers of generation, and the inclination of the several coalitions towards the producing the one or the other sex, according to the superiority of power in either sex, at the time of such respective coalitions.

In 1710 was pub. *New Proposals by the Prolifical So. for Promoting a Contribution towards raising a Monthly Dividend on the Birth of Infants to be born in Wedlock, and living on the second day after their Birth.* We shall speak of this So. more at large under POPULATION.

In 1742, Herr Sussmilch pub. in Berlin a treatise *On the Divine Decree in the Variations of the Human Race, with regard to Births, Deaths, etc.* The work is frequently quoted by Malthus, Price, Milne, and other writers. We do not think it necessary to dwell upon it here. It is often quoted in these pages.

In 1747 a project was set on foot for a General Registry of Births kept at the Herald's Office, on St. Bennett's Hill, near St. Paul's, Lond. The prosp. of the scheme says :

As a General Registry of Births will be of the greatest use in preventing many controversies, and clearing up various difficulties with respect to inheritances and claims of different natures, The King's Heralds and Pursuivants of Arms have thought proper to open a Gen. Regis. of the Births of all Persons, whether natives or foreigners, whom the extensive commerce of this nation may invite to live among us, who shall think fit to apply to them at the Office of Arms.

The Supreme Courts of Judicature being held near this metropolis, a Gen. Regis. of Births from all parts of H.M. dominions collected into one, and ready at hand to be consulted, as in the case of wills, must save great trouble and expence which people are put to when it is necessary to consult such regis. as are now kept dispersed in the several parishes, and which do not comprehend the numerous births of children not baptized in the Estab. Church, or not baptized at all. Proper books will be provided for making the necessary entries, viz., for Lond. and places within the B. of mort.; for the country; and for the colonies abroad. Likewise one for entering the births of persons of any age, born before Christmas-Day, 1747.

There will be daily attendance given, holidays excepted, at the Office of Arms or Herald's Office aforesaid, at the usual office hours, viz., from nine in the morning till one, and from three till five in the afternoon, by a herald and a pursuivant, who are sworn officers; one of whom will make due and exact entries of what is brought before them.

For such who live in Lond., and can conveniently come to the office, one or both the parents are desired to attend there in person; or, in case that can't be done, two persons who were present at the birth, the midwife for one, if convenient, may attend and sign the entry, which shall be witnessed by two officers of arms, in the regis.-book, on paying the fee of half-a-crown; and at the same time an attested certificate of the entry made shall be given upon parchment, and sealed with the seal of the office.

For persons at a distance, they are desired to draw up a certificate, to be signed either by one or both the parents, or by two persons present at the birth, and if convenient the midwife for one, and to go to some neighbouring Justice of the Peace, before whom they are desired to make affidavit of the truth; which certificate and affidavit being transmitted to the office, with the fee of half-a-crown, shall be duly entered by one of the officers in waiting, and the originals shall be filed, or otherwise carefully kept. But if one person present at the birth can attend the office, and bring a certificate signed by one or both the parents, or two persons present at the birth, done in his presence, such certificate shall be enter'd, the person so attending signing the entry in the regis.-book in the presence of one of the officers in waiting. If the time and place of the parents' marriage be also given in, it may be a means of proving those marriages with more ease. But the mother's father's name should always be inserted.

In the 3rd ed. of De Moivre's *Doctrine of Chances*, pub. 1756, he takes up the reasoning of Nicolas Bernouilli, to which we have referred in this present art., and shows how he had misrepresented the argument of Dr. John Arbuthnot and others. Thus :

Dr. Arbuthnot never said, "that supposing the facility of the production of a male to that of the production of a female to be already fixt in nearly the ratio of equality, or to that of 18 to 17; he was amazed that the ratio of the numbers of males and females born should for many years keep within such narrow bounds"—the only proposition against which Mr. Bernouilli's reasoning has any force. But he might have said, *and we do still insist*, that "as from the obs., we can, with Mr. Bernouilli, infer the facilities of the production of the two sexes to be nearly in a ratio of equality; so from this ratio once discovered, and manifestly serving to a wise purpose, we conclude the ratio itself, or if you will, the form of the die, to be an effect of intelligence and design." As if we were shown a number of dice, each with 18 white and 17 black faces, which is Mr. Bernouilli's supposition, we should not doubt but that those dice had been made by some artist, and that *their form was not owing to chance, but was adapted to the particular purpose he had in view.*

It is clear that De Moivre viewed the whole question in the light of this general proposition, which he had laid down, and which is the very converse of the reasoning of many writers, both ancient and modern, "that although chance produces irregularities, still the odds will be infinitely great, that in process of time, those irregularities will bear no proportion to the recurrence of that order which naturally results from orig. design." This argument certainly seems to apply in a remarkable manner to the proportion of births.

In the *Phil. Trans.* for 1767 (vol. 57), there is a paper by Dr. Thomas Heberden, *Of the Increase and Mort. of the Inhabitants of the Island of Madeira.* In this island it appeared that for the 8 years 1759-66, the weddings had been to the births as 10 to 46.8; and to the burials as 10 to 27.5, or 9 to 24.75.

That the numerical progress of a community may be approximately ascertained by means of carefully compiled regis. of its birth, read in the light of its death registers, complied with equal care, has long been known. But in order to be exact, it is necessary that there be no fluctuations in the pop. by means of emigration, or immigration. An instance is recorded by Dr. Derham, in his *Physico-Theology* [first pub. 1713, but afterwards passing through many eds.], in the parish of Aynho in Northamptonshire—a purely agricultural district—where for a period of 118 years, the births had been to the marriages

as 6 to 1 ; yet the burials had been to the marriages only as $3\frac{1}{4}$ to 1. Dr. Price gives various instances of this character. [See also Porter, 1833, in this art.]

Dr. Price found that in the town of Northampton, for the 40 years 1741-80, the number of christened was in the whole 6326—of which 3218 were males, and 3108 females.

In 1798 the Rev. T. R. Malthus pub. his famous *Essay on the Principle of Population*, etc., wherein he laid down views regarding the influence of the birth-rate upon the welfare of a community, differing almost entirely from the views of any other writer, either before or since. His work has given rise to a large amount of controversy upon which we do not propose to enter here. [POPULATION.]

In our art. on BILLS OF MORT. various items of information are given regarding *Births*; and under date 1823 some very remarkable figures are given regarding the births, and proportion of sexes, in the City of *Palermo*.

In 1827 Herr Hofacker pub. at Tubingen his work: *De qualitatibus Parentium in Sobolem prodeuntibus præsertim rei Equariæ*, etc., of which, however, but little was known in Europe generally, and that little was obtained by means of an extract from it contained in the *Annales d' Hygiène*, 1829. The researches of Hofacker were based upon 2000 births in the city of Tubingen, in Wurtemberg. But as his Tables have since been communicated to the *Assu. Mag.* in extenso [vol. iii. p. 259], it seems unnecessary to repeat them here. They go to show that the sex is determined by the superior age of the male or female parent. He made some researches into a *rural* pop. of more limited extent than his city obs. Thus in a village there were born in 43 marriages where the wife was older than the husband, 83 boys and 103 girls; 17 marriages, where the husband was older by 9 to 12 years than the wife, 46 boys and 33 girls; 11 marriages, where the husband was 50 to 60 years old, 10 boys and 4 girls.

In other villages he found similar proportions; and on the whole his researches led to the conclusion that in cases where the wife is older than the husband, the proportion between the girls and boys is 1031 to 1000.

In 1830, Mr. M. T. Sadler, M.P., pub. his *Law of Population: a Treatise in six books, in Disproof of the superfecundity of human beings, and developing the real principle of their increase*. His theory, as will be judged from the title of his work, was altogether opposed to that of Malthus.

In 1833 Mr. G. R. Porter pub. his *Progress of the Nation*; and therein he laid it down that the proportionate number of children born in any country could not be taken as any test of the number of its inhabitants:

For it is well known that in climates where the waste of human life is excessive, from the combined causes of disease and poverty affecting the mass of the inhabitants, *the number of births is proportionably greater than is experienced in countries more favourably circumstanced*. Frequently, and indeed almost always, in old settled countries, the proportionate number of births *decreases* with the advance of civilization and the more general diffusion of the conveniences and luxuries of life. In fact, the pop. *does not so much increase because many are born, as because few die*.

The subject is treated in a somewhat different light by Sang in his *Essays on Life Assu.*, 1852. [POPULATION.]

In a paper by M. Edouard Mallet, entitled *Historical and Statistical Inquiries respecting the Pop. of Geneva from 1549 to 1833*, which appeared in the 17th vol. of the *Annales d' Hygiène Publique*, were contained various facts of interest concerning *births*, etc. For instance, the proportions between the marriages and the births from 1814 to 1833 were found to be 1 in 2.71, or nearly $2\frac{1}{4}$ children to each marriage. If 517 stillborn legitimate children were added, the proportions came to be 2.7193 born alive; stillborn, 0.1429: together, 2.8622 conceptions to each marriage. The writer says hereon:—

This mode of calculating the proportion by the total number of marriages and the total number of births may be questioned, as the regis. do not distinguish the marriages which have proved barren; and the births in a town do not exactly correspond with the marriages in the same town. In Geneva children are born of parents who were married elsewhere, and persons who are married there settle in other parts. Besides, the births which are regis. in one year do not correspond with the marriages celebrated in the same year; therefore the births which took place in 1814 were the offspring of the marriages of the previous year, and the births consequent on the marriages in 1833 will not appear before the following year.

These objections could not be overlooked in considering the fecundity of a pop. for 1 or 2 years only; but in doing so for a period of 20 years their force disappears. As the fruitfulness of the marriages of 1814-15-16 has prob. ceased before 1833; and if the children who spring from the marriages of 1833 are excluded, their number will be nearly balanced by that of the children included from the marriages of 1813.

He next reviews the births of males and females during the years 1695 to 1791, both inclusive. The totals were 68,764, of which 35,022 were males, and 33,742 were females. In one decennial only, 1761-70, did the female births slightly exceed the male births:

The male births were 50.93 p.c. of the total number, and in proportion to the female births were as 103.8 to 100. The female births were 49.07 p.c. of the total number, and in proportion to the male births were as 96.3 to 100. As in the same years there were 65,030 deaths, the births exceeded the deaths by 3734, or $\frac{1}{18}$. On comparing the births and deaths of each sex, the following results appear:

Male Births	33,113	Female Deaths	32,457
„ Deaths	29,568	„ Births	31,903
Excess of Male Births ...	3545	Excess of Female Deaths...	554

In the periods following, the proportion of ann. births to the pop. varied thus: from

1655 to 1710, 1 in 27 ; from 1711 to 1730, 1 in 30 ; from 1731 to 1750, 1 in 31 ; from 1751 to 1770, 1 in 30 ; from 1771 to 1791, 1 in 33. During the six years, from 1786-91, there were 278 illegitimate in 4352 births, being about 1 in 15. During the period 1806-12, the births were in the proportion of 1 to 40 of the pop. During the 20 years ending 1833, the births were only in the proportion of 1 in 47 of the pop. During the decennial period 1824-33 the births increased 13·6 p.c. ; while the pop. increased 12·5 p.c.

The relative proportions of male and female births varied considerably during the 20 years 1814-33. In the years 1818-20-21, more females than males were born ; while in 1832 the males exceeded the females by 57 p.c. ! During the decennial 1814-23 the per-centage of males to the whole births was 51·163 p.c. ; in the decennial 1824-33, they were 52·684 p.c. On an average of the 20 years, 13 males were born to 12 females. With regard to the illegitimate births, the following fact appeared—the males were in the proportion of 69 to 68 females. In the first 10 years the stillbirths were 1 in 15 ; in the second, 1 in 19. This decrease was attributed to improved midwifery. The number of males who were stillborn was greater than the number of females, in the proportion of 4 to 3. The twin births were 1 to 73 of the total births. In the total number of twin children, the excess of females was very nearly equal to that of the males in the total births. Male twins occurred less frequently than female twins ; and male and female twins were the most frequent. No triple births were recorded from 1814 to 1833.

At the meeting of the British Asso. held in Dublin in 1835, a Regis. which had been compiled by Dr. Robert Collins, M.D., then late Master of the Lying-in Hospital of Dublin, was presented. It extended to 16,414 deliveries. An abstract of it appears in the *Trans.* of the Asso. for that year ; but the results there given have a medical rather than a statistical bearing. Of 16,654 children, 1121 were stillborn ; and 214 of those born alive died—generally on the 8th or 9th day after birth. The Regis. extended over a period of 7 years, commencing Nov. 1826.

In the *Trans.* of the same Asso. for the following year there appears: *Obs. on the Periodicity of Births, showing the total number born in each Month ; the number of Premature Children ; the Sex, etc. ; the number of Stillborn Children, and Children dying ; also with regard to the death of the Mothers, and the most important complications met with in Delivery, deduced from the experience of 16,654 Cases.* This was indeed a series of most interesting tables deduced from the Registers of Dr. Collins. The following T. presents some combinations of facts of considerable interest.

Months.	Total children born Monthly.	No. of Males in each Month.	Premature births in each month.	Premature First Children.	Total First Children.	Premature Males in each mo.	No. of First children Males.
January ...	1493	761	39	18	418	23	209
February...	1315	676	34	10	366	19	190
March	1475	754	38	15	410	17	216
April	1382	738	43	12	405	17	225
May....	1375	701	44	14	417	19	203
June.....	1352	702	42	10	391	24	216
July	1389	747	41	17	405	24	221
August ...	1366	718	49	14	440	28	234
September.	1367	686	34	13	407	16	220
October ...	1371	663	54	22	434	26	227
November.	1369	701	34	13	472	19	254
December..	1363	701	46	14	422	23	207
Totals	16,617	8548	498	172	4987	255	2622

The following statistics, compiled from the returns of the five leading powers of Europe about the year 1842, are given in the 6th Rep. of the Reg.-Gen. They show not only the number and proportions of births in each country, but the illegitimate births (except in Russia) separately :

	Average Ann. Births.	Ann. Number of Illegitimate Births.	Ann. Births to 100 Persons Living.			Persons living to one Ann. Birth.
			Legitimate.	Illegitimate.	Both.	
France ...	970,714	70,336	2·632	·206	2·837	35
England..	517,739	34,796	2·992	·216	3·208	31
Prussia ...	562,394	38,795	3·507	·260	3·767	27
Austria ...	846,471	92,223	3·452	·422	3·874	26
Russia ...	2,121,671	—	—	—	4·284	23

In 1842 there was presented to the Brit. Asso. : *Report of a Committee of the Brit. Asso. for the Advancement of Science, consisting of Lieut.-Col. W. H. Sykes, F.R.S. ; Lord Sandon, M.P. ; G. R. Porter, Esq., F.R.S. ; J. Heywood, Esq., F.R.S. ; Dr. W.*

P. Alison, and E. Chadwick, Esq., *on the Vital Statis. of very large Towns in Scotland*. The Committee had been appointed in 1840. An extensive series of tables was prepared, including some on "Births and Baptisms." The report itself says regarding these:

The inattention which prevails among parents in Scotland in regard to the recording the births of their children in the public regis., even though the parties themselves continue to experience great inconvenience on many occasions on account of the omission, is so very great as to render the statistics of births of no avail to the statist. . . .

We need not proceed further—except to say that happily this state of things is *now* remedied.

In 1848 Dr. Kayser, Prof. of Statistics, at the University, Copenhagen, pub. a treatise: *Det Kongelige Medicinske Selskabs Skrifter*, in which he treats of fecundity, pop., etc., of Denmark. Instead of fixing the births in proportion to the whole pop., he fixes them in proportion to the whole number of women of the fertile age—which in the northern countries is between 20 and 50 years. He especially mentions the error so commonly committed in indicating the *morality* of a town or country by the proportion of the illegitimate births to the legitimate. The last number, he argues, is never constant, but depends upon the fluctuation of the marriages; when the marriages increase, the number of illegitimate births will be proportionably decreased; and when the marriages decrease, the number will be raised, although perhaps the real relation is quite otherwise. To compute that proportion, it will be necessary to compare the number of illegitimate births with the number of unmarried women living at the fertile age. In that manner he has computed the proportion at different periods for the towns in Denmark, with a result very different from that arrived at by the method commonly used. Some of his results we shall presently have to notice more in detail. It should be stated that Kayser's obs. were extended over a series of years, partly from 1827-44, and partly from 1830-44.

In a paper on the *Vital Statistics of Iceland*, read before the Statistical So. of Lond. in 1849 [vol. xiv. p. 1] by Dr. P. A. Schleisner, which was an abstract of his work: *Island undersøgt fra et largevidenskabeligt Synspunkt af*, pub. the same year, the writer says:

Almost all the foreigners who have travelled in Iceland have mentioned the extraordinary fecundity of the nation as something remarkable. It is noticed that families with 20 children and upwards occur frequently. But from such single facts, a general rule for the fertility of a nation cannot be deduced. I have tried to find it out. The fertility of a nation is commonly indicated by the proportion of the children born to the whole pop.

He then examines the theory of Dr. Kayser, as we have already set it forth, and considers it faulty:

It will be seen from the Swedish lists of births and deaths, which contain besides the number of children born, also the ages of the lying-in women, that the fertility is different at different ages, being for instance, in Sweden, highest between 30 and 35 years. Now it may very well happen that two nations, even if they contain the same number of fertile women, may contain a different fraction of them at the most fertile age, and also that the ratios of fertility—if I may so express myself—may differ at the various ages. It will therefore be necessary to construct the tables for the fertility in the same manner as for the mort., unless we follow the method indicated by Moser, who recurs to the marriages and life tables.

He then compares the results of Kayser's obs. for Denmark with those of his own for Iceland, in the several particulars discussed. We can only follow him in his details as to male and female births; thus:

	Average Yearly No. of Boys born.	Average Yearly No. of Girls born.	Proportion of boys to 100 girls born.
Denmark... ..	20,227	19,140	105·7 p.c.
Iceland	1,056	997	106·0 p.c.

He summarizes the entire results as follows:

It will hence be seen that the fertility of the Icelandic women both married, and especially unmarried, is a great deal greater than that of the Danish; but that the pop. in point of fertility is not so well composed as the Danish. In Denmark the number of married women out of the whole number of fertile women is 57·4 p.c.; while in Iceland it is only 51·9 p.c. It will be seen from the above T. that the number of male births exceeds that of female births in a higher degree in Iceland than in Denmark. I have already shown that the prob. lifetime of the Icelandic females in relation to the males is still better than in Denmark; hence it will not excite wonder to find that in the Icelandic pop. the proportion of the males to the females is as 1000 to 1020; while the proportion in Denmark is as 1000 to 1023. The proportion of stillborn children is more favourable in Iceland than in Denmark.

It cannot but be apparent that both Kayser and Schleisner are dealing with the results of small populations.

Mr. Saml. Brown, in a paper read before the Inst. of Actuaries in June, 1850, said: "The regis. of the births, which is an important element in ascertaining whether a pop. is increasing or decreasing, is very deficient even still, and has been noticed by the Reg.-Gen. with a view to its correction." We are glad to say that we believe most of the causes of error have been corrected.

There is good reason to believe that in England, at least, the rule of an excess of male births is subject to no exception.—*Dr. Guy, 1850, Statis. Journ. 13, p. 42.*

The following calculation of the Census Commissioners of 1851 shows the influence of *bachelorism* and *old-maidism* in retarding the progress of the pop., by keeping down the births: "The Brit. pop. contains a great reserve of *more than a million unmarried men, and more than a million unmarried women*, in the prime of life, with as many more of younger ages; and if *the whole of the pop. were married, the births in Gt. Brit. would,*

instead of 700,000, be about 1,600,000 ann., if they bore the same proportion to the wives at different ages as they do now !"

In that year (1851) the births regis. in England and Wales were 615,865 ; of these 573,865 were the children of *married*, and 42,000 of *unmarried* women. The number of married women of the child-bearing age, viz., 15 to 55, was returned at 2,553,894 in that year ; and of unmarried women, including widows as well as spinsters, 2,449,669. So that the above figures give to each 1000 of married women, 224 children born annually ; and to each 1000 *unmarried women, 17 children born annually!* Upon which the Census Commissioners remark that, " 186,920, or 1 in 13 of the *unmarried women must be living so as to contribute as much to the births as an equal number of married women!*" From these, or similar statistics, it has been calculated *that one out of every fifteen English men and English women now living was born illegitimate !*

In a letter communicated by Herr Hopf, of Gotha, to the eds. of the *Assu. Mag.*, in 1852 [vol. iii. p. 255], occurs the following passage, embodying some ideas which we regard as original :

The proportion which the *births* bear to the numbers of the pop. commonly is a much more uniform one than that of *deaths*. I some years ago collected the facts in reference to this question, which, with respect to *Prussia*, have led me to the following results : In the years 1816 to 1843, during which period the pop. of *Prussia* increased from 10 millions to 15½ millions, the average proportion of the *births* in this country amounted to 4·088 p.c. of the pop. a year, and that of the *deaths* to 2·886 p.c. But while the mort. of one year rose to 3·549 p.c., or exceeded by 22·95 p.c. the above-stated average proportion, and that of another year lowered to 2·515 p.c., or fell short by 12·85 p.c. of the same average ; the utmost fluctuations undergone by the births were between 4·487 and 3·652 p.c., or 9·77 p.c. *above*, and 10·68 p.c. *below* the average proportion. The *deaths*, therefore, required for their fluctuation a scope of 36 p.c. of the regular ratio, whereas the births varied only 20 p.c. ; and the former proved much less constant than the latter, though human will is allowed to exercise an influence on births which it cannot exercise on deaths. But this will Providence has limited by the action of instinct, the effects of which we see are far more uniform than the working of the law of mort. Considering this, *assu. for BIRTHS, when estab. on a large scale, might be granted with greater safety than DEATHS.*

Regarding the proportions of the sexes born, he remarks as follows :

It is a fact that 5 to 6 p.c. more boys than girls are born ; *but the cause of this fact does not seem to be as yet sufficiently fixed.* Hofacker, a German, and Sadler, have indeed found that from marriages up to a certain age of the married persons, there will be got so much the more boys, the more the age of the husband exceeds that of the wife. When it is therefore considered that, at least in Germany, the husbands on an average uses to be by 5 to 6 years older than his wife, *this difference of age would be sufficient to make good the excess of the male births.* Yet this difference of age, *instead of being the true operative cause of the fact in question, is, in my opinion, only another parallel exterior fact, unable to account for the other.* We first find that the *illegitimate* show a smaller proportion of the excess of boys—in *Prussia* there are among natural children only 103 boys to 100 girls—and yet we are not entitled to suppose the difference in the ages of the parents of natural children to differ materially from that of the parents of legitimate ones.

Another most striking abnormality occurs with the *Jews*, who amounting in *Prussia* to about 200,000, make at present about 1½ p.c. of the whole pop. of the kingdom of *Prussia*. Among this race, according to facts collected from a period of 15 years, the proportion between births of girls and births of boys being 100 to 111·21, the male births were prevalent in a degree prob. never heard of among any other race. . . . We must therefore think ourselves justified in drawing the inference, that with the *Jews* the difference of age in married persons is smaller than with *Christians* ; which being acknowledged, the above-mentioned excess of male births must appear still more strange, and is in no accordance whatever with the statements of Hofacker and Sadler, whose obs. were limited to the *Christian pop.* How is this abnormality to be accounted for ?

In 1853 Mr. Samuel Brown contributed to the *Assu. Mag.* [vol. iii. p. 17] a paper, *On the Influence of the Ages of the Parents at the time of Marriage on the Sex of Children, and on the Prolificness of Marriages.* In this paper reference is made to many of the facts already here noted, and much additional light is thrown upon the points treated of.

In 1855 Dr. Guy read before the Brit. Asso., at Glasgow, a paper, *On the Fluctuations in the Number of Births, Deaths, and Marriages, and in the Number of Deaths from Special Causes, in the Metropolis during the last 15 Years, from 1840 to 1854 inclusive.* The author says :

In reference to the return of births, deaths, and marriages, it will be sufficient to state that while there is reason to believe that the number of marriages and deaths is truly reported, *the reported number of births, in consequence of the regis. of births not being compulsory, has generally fallen short of the actual number, especially in the first years of the series. This will have to be borne in mind when I come to speak of the fluctuations in the number of births.* . . . The births which amount, on an average of the 15 years, to 32,028 *in the million*, have fluctuated between a minimum of 30,348, and a maximum of 33,736—the first number having been regis. in the first year, the last number in the last year of the series. The mean fluctuation in the intervening period has amounted to nearly 2 p.c. . . . In distinguishing the births and deaths as male and female, we have occasion to observe that both the mean and extreme fluctuations in births and deaths are somewhat greater in females than in males. As the differences, however, are not very considerable, it will suffice to have pointed out the fact.

Dr. Guy points out that while the deaths in Lond. for the 5 years 1840–44 inclusive fluctuated as 2·87, the *births* only fluctuated as 1·34—the one amount being more than twice as great as the other. In other words, the causes, whatever they may be, which, by their combined operation from year to year, brought about the ascertained number of births, *were nearly twice as uniform in their operation as those causes, whatever they be, which issued the ascertained number of deaths.*

The English schedule is defective, as it does not show the age of the father and mother at the birth of the child ; but it may be inferred, from the *Swedish* returns, that not more than 1 in 8 women who bear children is under the age of 20, or above the age of 40.—14th Rep. of Reg.-Gen., 1855.

The late Mr. Buckle, in his learned *History of Civilization*, pub. 1857, says :

Now it has always been suspected that on an average the male and female births are tolerably equal; but until very recently no one could tell whether or not they were precisely equal, or, if unequal, on which side there was an excess. . . . By the simple experiment of registering the number of births and their sexes; by extending this regis. over several years, in different countries, we have been able to eliminate all casual disturbances, and ascertain the existence of a law which, expressed in round numbers, is, that for every 20 girls there are born 21 boys; and we may confidently say that although the operations of this law are of course liable to constant aberrations, the law itself is so powerful, *that we know of no country in which, during a single year, the male births have not been greater than the female ones.*

The same writer has further pointed out that if this proportion were greatly disturbed in any country, even for a single generation, society would be thrown into the most serious confusion; and there would be a great increase in the vices of the people. He adds :

The causes of the difference have never been solved, although physiologists have made many efforts to ascertain it. They did not indeed discover the fact. The statisticians did this; as they have also discovered that the relative age of the parents does affect the sex of the children.

It used to be supposed that some of the Eastern countries, where polygamy prevails, furnished an exception to this rule; but more precise obs. have corrected and contradicted the loose statements of the earlier travellers; and in no part of the world, so far as our knowledge extends, are more girls born than boys; while in every part of the world, for which we have statistical returns, there is a slight excess on the side of male births.

The following important T., showing the *Marriage and Birth* rates for the years 1860-1 in four of our largest towns (*cities* in point of pop.) compared with those in the chief agricultural counties of England, is from an important paper submitted by Dr. John Edward Morgan, M.D., to the Social Science Congress, in 1865, *The danger of Deterioration of Race from too rapid increase of Great Cities*; and which, as well at the time as since, has engaged much attention. It shows unmistakably that the natural increase of pop. is materially influenced by different conditions of life.

MARRIAGE AND BIRTH RATES TO EVERY 1000 POPULATION.

TOWNS.	MARRIAGE-RATE.		Average.	BIRTH-RATE.		Average.
	1860	1861		1860	1861	
London	9.9	9.5	9.7	33	34	33.5
Manchester... ..	19.0	18.1	18.5	37	38	37.5
Liverpool	15.0	14.3	14.6	31	32	32.5
Birmingham ...	10.3	9.5	9.9	39	40	39.5
Averages	13.5	12.8	13.6	35	36	35.5

COUNTIES.	MARRIAGE-RATE.		Average.	BIRTH-RATE.		Average.
	1860	1861		1860	1861	
Surrey	6.2	6.0	6.1	30	30	30
Kent	7.5	7.3	7.4	31	32	31.5
Sussex	7.1	7.0	7.0	29	30	29.5
Hants.....	8.1	8.0	8.0	31	31	31
Berks.....	6.9	6.9	6.9	30	31	30.5
Middlesex.....	5.1	5.0	5.0	30	30	30
Herts.	5.9	5.7	5.8	31	30	30.5
Bucks.....	7.1	7.2	7.1	33	34	33.5
Oxford.....	7.0	7.2	7.1	33	33	33
Northampton....	8.4	7.1	7.7	36	35	35.5
Huntingdon.....	7.0	6.6	6.8	33	32	32.5
Bedford	7.9	7.6	7.7	33	34	33.5
Cambridge.....	6.9	6.3	6.6	33	32	32.5
Essex.....	6.4	5.9	6.1	32	31	31.5
Suffolk.....	6.9	6.8	6.8	32	32	32
Norfolk.....	7.4	7.4	7.4	31	32	31.5
Wilts.....	6.9	6.7	6.8	31	31	31
Dorset.....	7.8	7.1	7.4	31	31	31
Devon.....	8.8	8.3	8.5	30	31	30.5
Somerset.....	7.6	7.0	7.3	30	30	30
Gloucester	8.9	8.8	8.8	31	32	31.5
Hereford	6.9	6.7	6.8	29	31	30
Salop.....	7.0	7.0	7.0	31	32	31.5
Worcester... ..	8.7	8.8	8.5	34	34	34
Rutland	6.9	5.4	6.2	32	30	31.5
Lincoln	7.4	7.0	7.2	33	33	32.5
Westmoreland....	7.0	6.7	6.8	32	31	31.5
Averages	7.1	6.9	7.0	31.5	31.7	31.5

In 1862 Mr. Frederick Hendriks read before the Statistical So. of Lond. a paper, *On the Vital Statistics of Sweden*, from 1749 to 1855. This is a most exhaustive production. We must be content to extract a few of its more prominent results.

One living child had been born ann. to the following numbers of the entire pop. :

Between 1751-1775	1 in 29·09	} average of the three periods, 39·39.
„ 1756-1815	... ..	1 in 30·73
„ 1816-1855	... ..	1 in 30·87

One living child had been born ann. to the following numbers of *Female* pop. :

Between 1751-1775	1 in 15·21	} average of the three periods, 15·76.
„ 1776-1815	... ..	1 in 15·89
„ 1816-1855	... ..	1 in 15·98

The stillborn children being added did not materially affect the results.

One child (living or stillborn) had been born to the following number of women between the ages 15 and 55 :

Between 1806-1815	1 in 8·97	} average, 8·53.
„ 1816-1855	1 in 8·43	

To each 1000 female children born between 1749 and 1855, there had been on an average 1044 males.

To one marriage contracted, the following were the number of children born alive :

Between 1751-1775	average 3·98	} average of the three periods, 3·99.
„ 1776-1815	... ..	„ 3·77
„ 1816-1855	... ..	„ 4·23

The illegitimate births had increased from 6·78 p. 100 of all births (including stillborn) in 1831-35, to 9·55 in 1855 ; at which last date they stood in relation to legitimate births as 10·55 to 100. The illegitimate births in 1851-55 were one to every 165 of the entire female pop. ; and 1 to every 45 of the unmarried women over 15 years of age. Among the illegitimate births the proportion of boys to 1000 girls was 1027, against 1047 in the legitimate births.

Wars and famines each exercise an influence more or less considerable upon the births of a nation. “War (says the Reg.-Gen.) removes married men from their homes to occupy garrisons and encampments, to man the fleets, or as workmen, to furnish the mighty equipments of sea and land.” This is an influence in add. to the even more direct one, of the number of men of a marriageable age who are killed. Then war too often produces *famine*, and famines lessen in a marked degree the reproductive powers. These considerations will be followed out under their respective heads: FAMINES ; WARS.

In the Kingdom of *Greece*, in 1861, the pop. (excluding the Ionian Islands) was 1,096,810. The marriages were 7175 ; the births 32,405,—males, 16,775 ; females, 15,630. The marriages were at the rate of 6·54 p. 1000 of the pop. ; the births 29·54 p. 1000. In the Ionian Islands the births in 1864 were 25·42 p. 1000.

In 1863 an Act was passed providing for the Regis. of Births and Deaths in Ireland. The Act came into operation in 1864. During the first quarter there were regis. 30,330 births, affording an ann. ratio of 1 in 48 of the inhabitants. In the quarter ending 30th June, 1864, there were regis. 38,701, affording an ann. ratio of 1 in 37. The birth-rate varied in the different provinces as follows : In Leinster, 1 in 38 ; in Munster, 1 in 34 ; in Ulster, 1 in 38 ; in Connaught, 1 in 41. The returns of course were not perfect. We shall speak more at large upon the subject under IRELAND.

For the first time we meet with some statistics regarding the Birth-rate in Australia, which should be authentic. The Reg.-Gen. for *Melbourne* returned the pop. for that city and suburbs during 1863 at 114,000 ; and the births for the same year were returned as 5,590. The birth-rate was thus 48·9 p. 1000. The rate was taken separately for the 11 districts of the city and suburbs. The highest birth-rate was 79·5, the lowest 33·9 p. 1000 of the pop.

In 1864 obs. of a similar character were taken in *Sydney*. The total pop. of that city and suburbs then was 43,625. The births in the year were 1993—being at the rate of 45·7 p. 1000 of the pop. The obs. were taken separately for the 8 districts of the city. The highest birth-rate was 64·9, the lowest 37·3 p. 1000. The range of fluctuation was therefore much less than in Melbourne. The *Melbourne Argus* (1865), commenting on these figures, said :

When we compare the foregoing figures with similar data for European Countries and Capitals, we find that the two Australian Colonies enjoy an absolute supremacy in the matter of births. The prolificness of our pop. is something evidently never dreamt of in the philosophy of the antipodean nations. In England the average birth-rate for the ten years 1852-62 was 34 p. 1000 ; in Lond. it was 33·8 p. 1000. The highest average rate in any English county during the same period was 41 p. 1000 in Staffordshire and Durham—a ratio not even equal to the *average* rate of birth in the suburbs of either Sydney or Melbourne, and *lower by nearly 40 p. 1000 than the birth-rate of North-Melbourne*. The lowest birth-rate at home [England] is that of the extra-metropolitan part of Surrey, which was 29·4 p. 1000, or nearly 5 p. 1000 less than the lowest Melbourne suburb, and 8 p. 1000 less than the lowest Sydney suburb. The same with other countries. *Scotland* has a birth-rate of 34·4 p. 1000, rising in the towns to 38 p. 1000. In *France* the birth-rate is 26·6 p. 1000 ; in *Austria* 39·4 p. 1000 ; in *Italy* 38·2 p. 1000—*none of these rates at all approaching the average birth-rate* of either Sydney or Melbourne.

The highest birth-rate in the *Melbourne* suburbs was considerably higher than that of any of the *Sydney* suburbs.

In 1865 Mr. W. L. Sargant read before the Statistical So. a paper: *Inconsistencies of the Census of 1861, with the Reg.-Gen. Reports; and Deficiencies in the Local Registry of Births*. The conclusions at which the author arrives will be given in our art. CENSUS, under this date—especially under conclusions numbers 7 and 8.

The births regis. in the U.K., 1865, exclusive of the islands in the Brit. seas, amounted to 1,006,223, and this is below the actual number, as all the births are not regis. in Ireland or England.—Dr. Farr.

More boys are born alive than girls, and the boys dying in greater numbers, the provision of nature brings the sexes nearly to an equality at the age of marriage. Thus of 1000 children born in England 512 are boys, 488 girls; 334 men, 329 women, live to the age of 20. The excess of boys is reduced from 24 to 5; and if there was no emigration and foreign service, the men of the age of 20–40 would exceed the women in number. An unchanging million of ann. births will produce, according to the law of vitality in England, a pop. of 20,426,138 males, 20,432,046 females, large numbers differing quite inconsiderably.—Dr. Farr, 1866.

In 1866 Mr. T. A. Welton read before the Statistical So. of Lond. a paper: *Observations on French Pop. Statistics, particularly those of Births, Deaths, and Marriages*. The paper is pub. in the *Journal* of that So. [vol. 29, p. 254]. We can only briefly refer to the interesting facts it presents. He says:

Births appear to be relatively most numerous in the division of *Alsace*, where marriages are few and late, and least numerous in that of *Western Normandy*, though marriages are even less numerous than in *Alsace* they are earlier. Some cause, apart from the custom of the people as to marriage, must exist for such a disparity in the porportion of births. Thus—

	Marriages per 1000 Inhabitants.	Proportion of Women marrying under 25 years of age.	Births per 1000 Inhabitants.
Alsace	7.5	36.1	32.3
Western Normandy	7.2	48.1	21.3
Lower Loire	7.4	47.1	24.9

A further examination of the birth-rates in the year 1856 does not present less singular results. Thus we find in Brittany and the division of the Adour, higher proportions of births than in Lower Garonne and Upper Seine. Comparative lateness and even paucity of marriages do not seem to be at all incompatible with relatively high birth-rates, and *vice versa*:

	Marriages per 1000 Inhabitants.	Proportion of Women marrying under 25 years of age.	Births per 1000 Inhabitants.
Britanny	7.0	42.7	29.8
Adour	6.9	47.3	25.0
Lower Garonne	8.3	59.7	22.0
Upper Seine	8.0	60.0	23.7

Perplexed by these figures, we may reasonably consult the statistics, in order to ascertain what is usual out of *France*. We shall find that in the same year (1856) a marriage-rate of 8.5 in *England* was co-existent with a birth-rate of 35.0 p. 1000 inhabitants; and that *Belgium*, with a marriage-rate of 7.3, had 29.6 births per 1000 inhabitants. Rather more than 4 births to one marriage were recorded in both these countries. The same may be said of Brittany and Alsace.

He concludes, naturally, that the exceptional circumstances must be looked for in the districts where the birth-rate is low. [MARRIAGES.] [POPULATION.]

In 1866 Mr. Samuel Brown read before the Statistical So. a paper: *On the Statistical Progress of the Kingdom of Italy*; and the same is pub. in the *Journal* of that So. [vol. 29, p. 197]. From it we derive the following facts. The births in 1862 were 833,054—males, 428,922; females, 404,132; being 106 to 100. Parma and Piacenza show the highest rate of male births, being 112.5 to 100; and Sicily the lowest, 104.5 to 100. The town pop. shows the highest rate of births, being 4.1 p.c. of the total inhabitants, and rural 3.7 p.c.—total, 3.83 p.c. In regard to fecundity of pop., Sicily shows the highest, 4.28 p.c. of the total inhabitants; and Umbria the least, 3.34 p.c. Dividing the number of births by that of marriages, the town communes give 5.01 p.c., and the rural 4.58 p.c.—mean for the whole kingdom, 4.71 p.c. By this rule the Marches show the highest rate, 5.59 p.c., and Piedmont the lowest, 4.39 p.c.

But the crowning work of the year 1866 was the pub. by the Belgian Gov. of *Bulletin de la Commission Centrale de Statistique*, a work prepared by the enlightened Belgian officials, under the supervision of M. Quetelet, to whom we are indebted for its able preface. In the work itself is presented the leading vital statistics of the principal European pop. An able summary of it will be found in the *Statistical Journ.* [vol. 31, p. 146]. We have here, as in other cases, to limit ourselves to a few of its leading facts.

The regis. of births is not so perfect as one could wish in several countries. In some the civil regis. is still incomplete, and where it is conducted by the religious denominations, some omissions must be expected. In 17 countries the returns of the births in the census year were found to exhibit a little excess over the average of the few years preceding—which might be anticipated from the fact that in most countries the pop. was increasing. . . .

The most remarkable rate of fecundity is shown in *Russia*; and especially in the single year under obs. [1858], when it was nearly twice as high as in *France*. The general average may be fairly taken at about 333 in 10,000, or 33 p.c. . . .

In the *stillborn* the remarkable fact is observed that males exceed the females in the proportion of 1335 to 1000—the excess of males amongst children who die in birth being six times as great as the excess of the males in children born alive. And this result is general, since the limits vary only from 1456 in *France* to 1254 in the *Netherlands*: the latter being nearly 5½ times as great as the lowest excess of males in children born alive.

The following T. of results we compile from the materials of several tables in the work. The year of obs. is generally the "census year;" where the obs. extend over several years, the "mean" is given:

	Year of Obs.	Total Births.		Stillborn.		Total.	Total Births to 10,000 Inhabitants.
		Male.	Female.	Male.	Female.		
Russia	1858	1,483,230	1,413,720	—	—	—	488
Austria	1857	739,708	695,343	13,546	10,045	23,591	383
France	1860	489,646	467,229	26,264	18,034	44,298	256
England and Wales	1860	302,834	290,588	—	—	—	341
Prussia	1861	354,788	338,201	16,979	13,050	30,029	377
Spain	1861	315,584	296,025	—	—	—	391
Bavaria	1860	82,277	77,826	3228	2339	5567	341
Belgium	1860	74,368	70,300	3995	2985	6980	297
Sweden (mean) ...	1856-60	64,267	61,380	—	—	—	334
Portugal	—	60,951	57,519	—	—	—	358
Netherlands (mean)	1850-59	59,307	56,262	3628	2894	6522	351
Saxony	1861	46,672	44,133	2316	1762	4078	408
Denmark	—	46,103	43,083	—	—	—	342
Hanover	1858	31,277	29,290	1358	1062	2420	321
Norway	1860	27,386	25,688	1341	997	2338	356
Greece	1861	16,775	15,630	—	—	—	296

Statisticians have calculated that if the pop. of the world amounts to between 1200 and 1300 million persons, the number of *deaths* in a year would be about 32 millions. Assuming the correctness of this calculation, the deaths each day would be nearly 88,000; 3600 per hour, 60 per minute, and thus every second would carry into eternity one human life from one part of the world or another. But reproduction asserts its superior power; for, on calculating the probable ann. *births* on the globe, the result shows that whereas 60 persons die per minute, 70 children are born, and thus the increase of the pop. is kept up.—*Lancet*, 1867. The excess of *births* over deaths in the U.K. is now more than 1000 per day. In *England* it is above 250,000 a year; in *Scotland*, above 40,000; in *Ireland* it is estimated at nearly 70,000.

Our great store-house of modern information on all subjects connected with the births, marriages, and deaths of our pop., and not only of our own pop., but incidentally of many other pop., consists of the ann. reports of our Reg.-Gen.—supplemented as they are decennially by the reports of the Commissioners of the Census. It is impossible to speak too highly of these several productions, or of him under whose *actual* (as distinguished from *nominal*) direction they are—we mean Dr. Farr, and with him we always associate, although we do not always name, his talented staff of assistants. Since these reports have become what they are, we have had little occasion to look beyond them for information. We propose to complete this paper mainly by their aid.

The number of births regis., and the ann. birth-rate to 1000 of pop. respectively, in each of twelve large towns of the U.K. in the year 1867, was as follows: Bristol, 6004 and 36.4; Birmingham, 13,029 and 38.0; Liverpool, 19,561 and 39.9; Manchester, 13,365 and 37.0; Salford, 4517 and 39.4; Sheffield, 9296 and 41.3; Leeds, 10,254 and 44.3; Hull, 4142 and 38.9; Newcastle-on-Tyne, 4815 and 38.7; Edinburgh, 6422 and 36.6; Glasgow, 18,322 and 41.7; Dublin, 8240 and 25.9. The natural increase of pop. by excess of births over deaths during the year was 981 in Newcastle-on-Tyne, 1250 in Salford, 1487 in Hull, 1662 in Edinburgh, 2011 in Manchester, 2283 in Bristol, 3727 in Sheffield, 4008 in Leeds, 4711 in Birmingham, 5050 in Liverpool, and 5779 in Glasgow.

The second quarter of 1868, said the Reg.-Gen., is the first time that 200,000 children have been born alive in England and Wales *in a quarter of a year*. The exact number reached 202,892—2230 a day, 1½ a minute, if we might divide a child. The marriages in 1867 had been fewer than in either of the three preceding years, but in 1864, 1865, and 1866, they had been unusually numerous. The death-rate in the second quarter of the year 1868 being lower than in the spring quarter of any year since the national civil registration began, the extraordinary result is presented of no less than 14 of the 40 counties of England having twice as many births as deaths—viz., Kent, Berkshire, Hertfordshire, Buckinghamshire, Oxfordshire, Northamptonshire, Huntingdonshire, Cambridgeshire, Essex, Somerset, Staffordshire, Worcestershire, Lincolnshire, and Durham. The same may be said, too, of South Wales, taken as a whole.

In the 30 years 1840-1869 the regis. *births* in England and Wales (of children born alive) have exceeded the regis. *deaths* by 6,551,031, averaging 218,368 a year. In the five years 1840-44 the ann. average of this natural increase was 168,771; in the five years 1845-49 it was 158,734, being kept down by the high mort. of the years 1847, 1848, and 1849; in the five years 1850-54 the ann. average was 209,913; in the five years 1855-59, 234,894; in the five years 1860-64, 259,412; in the 5 years 1865-69, 278,481.

The ann. average number of *births* has increased from 520,058 in the first five years of the 30 years series—i.e. 1840-44, to 766,105 in the last five years—i.e. 1865-69; while the ann. average number of *deaths* has only advanced from 351,286 in 1840-44 to 487,624 in 1865-69. Thus the regis. *births* show an increase of above 47 p.c.; the regis. *deaths* an increase of not quite 39 p.c.

The following T. shows the ann. births in *England* over a period of 25 years, distinguishing the illegitimate; and also defining the relative proportions of the sexes, both legitimate and illegitimate. The T. is instructive in many respects:

YEARS.	BIRTHS REGISTERED.			Males born to every 100 Females born.	Males born in Wedlock to every 100 Females so born.	Males born out of Wedlock to every 100 Females so born.	Children born out of Wedlock to every 100 births.
	TOTAL BIRTHS.	LEGITIMATE.	ILLEGITIMATE.				
1845	543,521	505,280	38,241	—	—	—	—
1846	572,625	534,096	38,529	—	—	—	—
1847	539,965	503,840	36,125	—	—	—	—
1848	563,059	526,312	36,747	—	—	—	—
1849	578,159	538,825	39,334	—	—	—	—
1850	593,422	553,116	40,306	—	—	—	—
1851	615,865	573,865	42,000	104.7	104.7	103.9	6.8
1852	624,012	581,530	42,482	104.6	104.6	104.8	6.8
1853	612,391	572,628	39,763	105.1	105.1	104.6	6.5
1854	634,405	593,664	40,741	104.4	104.3	106.1	6.4
1855	635,043	594,260	40,783	104.1	104.1	104.8	6.4
1856	657,453	614,802	42,651	104.2	104.3	103.1	6.5
1857	663,071	620,069	43,002	105.2	105.3	104.1	6.5
1858	655,481	612,176	43,305	104.5	104.4	106.2	6.6
1859	689,881	645,130	44,751	104.6	104.5	105.7	6.5
1860	684,048	640,355	43,693	104.7	104.8	102.9	6.4
1861	696,406	652,249	44,157	104.6	104.5	106.1	6.3
1862	712,684	667,462	45,222	104.1	104.1	103.4	6.3
1863	727,417	680,276	47,141	104.7	104.6	106.3	6.5
1864	740,275	692,827	47,448	104.2	104.2	104.4	6.4
1865	748,069	701,484	46,585	104.0	104.0	103.9	6.2
1866	753,870	708,369	45,501	104.3	104.3	104.8	6.0
1867	768,349	723,163	45,186	104.3	104.2	105.7	5.9
1868	786,858	740,720	46,338	103.6	103.5	104.7	5.9
1869	773,381	728,690	44,691	104.2	104.1	105.0	5.8

The theory has heretofore been that the proportion of *males* in *illegitimate* births was smaller than in the case of *legitimate* births. The fact appears to be entirely the other way in *England*: that is since 1851, further back than which we have no accurate statistics on the subject. We had, however, better place on record the obs. which have been taken of an opposite character. They are none of them very recent, nor can even the date of obs. now be fixed in most of the instances.

	Legit. Males to 1000 Fem.	Illegit. Males to 1000 Fem.		Legit. Males to 1000 Fem.	Illegit. Males to 1000 Fem.
Prussia (1820-34) ...	1060	1031	E. Prussia and Posen	1058	1036
France	1067	1048	Paris	1038	1034
Naples (1819-24) ...	1045	1037	Geneva (1814-33)...	1090	1015
Austria	1062	1042	Amsterdam	1050	1088
Wurtemberg	1060	1035	Leipzig	1062	1059
Sweden	1047	1031	Montpellier (1772-92)	1071	1008
Bohemia	1057	1004	Frankfort-on-Maine	1028	1078
Westphalia (1809-11)	1047	1004			

The only two cases in this T. in which the illegitimate males exceed the legitimate are *Amsterdam* and *Frankfort*; and in these cases the excess is greater than in any recorded year in the English returns as given above.

The following T. shows the proportion of *male* births to each 1000 *female* births in various European countries:

	Including Born Stillborn.	Born Alive.		Including Born Stillborn.	Born Alive.
Austria ... between 1830-47 ...	1066	1062	Hanover . between 1824-43 ...	1065	1054
Baden	1835-55 ...	1059	Holland . , , 1840-53 ...	1065	—
Bavaria ... , , 1835-51 ...	1063	—	Norway . , , 1801-55 ...	1059	1050
Belgium.. , , 1841-50 ...	—	1052	Prussia ... , , 1816-52 ...	1057	—
Denmark. , , 1835-49 ...	1055	1041	Saxony ... , , 1834-49 ...	1065	—
England.. , , 1843-52 ...	—	1047	Scotland. , , 1855-56 ...	—	1053
France ... , , 1817-54 ..	1062	—	Sweden... , , 1749-1855	—	1044

That the *seasons* affect the fecundity of the pop. appears to be a fact founded upon

incontrovertible proof in England. See the following T. of births regis. in each quarter for the last 32 years. Graunt had remarked upon this fact more than two centuries ago.

YEARS.	BIRTHS.				ANNUAL BIRTH RATE PER 1000.			
	In the Quarters ending the last day of				In the Quarters ending the last day of			
	March.	June.	September.	December.	March.	June.	Sept.	Dec.
1838	113,815	121,781	114,734	113,457	30'32	31'98	29'70	29'28
1839	123,543	128,806	120,115	120,110	32'48	33'38	30'69	30'59
1840	132,305	129,059	119,822	121,117	33'95	33'01	30'21	30'44
1841	133,720	129,884	123,868	124,686	34'24	32'78	30'82	30'92
1842	135,615	134,096	123,296	124,732	34'31	33'44	30'32	30'58
1843	136,837	131,279	128,161	131,048	34'20	32'34	31'14	31'74
1844	143,578	136,941	130,078	130,166	35'07	33'34	31'23	31'15
1845	143,080	136,853	132,369	131,219	34'91	32'91	31'40	31'03
1846	145,108	149,450	138,718	139,349	34'98	35'51	32'51	32'56
1847	146,453	139,072	127,173	127,267	34'88	32'65	29'45	29'38
1848	139,736	149,760	140,359	133,204	32'52	34'74	32'11	30'38
1849	153,772	153,693	135,223	135,471	35'75	35'23	30'56	30'53
1850	144,551	155,865	146,911	146,095	33'21	35'30	32'81	32'53
1851	157,286	159,073	150,594	148,912	35'63	35'53	33'18	32'71
1852	161,803	159,031	151,222	151,956	35'83	35'11	32'93	32'99
1853	161,729	158,697	147,602	144,363	35'79	34'64	31'77	30'99
1854	160,785	172,457	154,724	146,439	35'18	37'21	32'93	31'08
1855	166,225	165,277	154,700	148,841	35'96	35'26	32'55	31'23
1856	169,250	173,263	157,462	157,478	35'80	36'55	32'76	32'67
1857	170,430	170,444	161,181	161,016	36'04	35'55	33'16	33'04
1858	170,959	169,115	157,445	157,962	35'76	34'88	32'04	32'05
1859	175,532	175,864	168,394	170,091	36'31	35'88	33'89	34'14
1860	183,180	174,028	164,121	162,719	37'07	35'12	32'67	32'30
1861	172,933	184,820	172,033	166,620	35'00	36'90	33'88	32'72
1862	181,990	185,554	172,709	172,431	36'44	36'65	33'65	33'50
1863	186,341	180,340	173,439	178,297	36'91	37'00	33'43	34'28
1864	192,947	188,835	181,015	177,478	37'40	36'51	34'53	33'76
1865	194,130	192,988	181,941	179,010	37'65	36'92	34'34	33'70
1866	196,753	192,437	179,086	185,594	37'77	36'44	33'46	34'58
1867	194,763	199,660	190,782	183,144	37'00	37'42	35'28	33'78
1868	198,584	202,839	192,583	192,852	36'93	37'63	35'25	35'21
1869	203,775	188,618	190,394	190,594	37'93	34'64	34'50	34'45
Mean ann. rate p. 1000 in each quarter					35'41	35'08	32'47	32'20

The mothers of all the children that are born in *England* are between the ages of 15 and 55, and the greater part of them are between the ages of 20 and 40. Nine in ten husbands have children. In *England* the children born in wedlock to a marriage are 4'3. The birth-rate is sustained at 35 p. 1000 of the pop., while the death-rate is only 23 p. 1000. In *France* the marriages have been kept up, but the average births to a marriage have been reduced to 3'1; the birth-rate in the last return, 1853-68, was 26'15 p. 1000 of the pop.; the death-rate 23'72 p. 1000—difference 2'63 p. 1000. The natural ann. increase was barely 0'26 p.c.—*Preliminary Report on Census, 1871.*

The following is the proportion of children *born* to the inhabitants of various European countries:

Austria ...	between	1830-47	1 child to	25'04	of the pop.
Baden ...	"	1831-55	"	26'47	"
Bavaria ...	"	1833-44	"	35'50	"
Belgium ...	"	1841-50	"	33'15	"
Denmark ...	"	1835-49	"	31'43	"
England ...	"	1838-50	"	30'71	"
France ...	"	1817-54	"	34'61	"
Hanover ...	"	1824-53	"	30'32	"
Ireland ...	"	1832-41	"	30'3	"
Netherlands ...	"	1841-53	"	28'58	"
Norway ...	"	1825-55	"	31'4	"
Prussia ...	"	1748-1852	"	24'61	"
Saxony ...	"	1836-50	"	24'63	"
Sweden ...	"	1776-1855	"	29'87	"

In the case of England in this table it is one *living* child. In the other countries *stillborn* are included.

Illegitimate Births.—In *England* the per-centage of illegitimate births to the total births had declined from 6'7 in 1847 to 5'9 in 1867; while the number of persons married to

every 100 of the pop. has increased from 1·586 in 1847 to 1·672 in 1867. In *Scotland*, where many of the births regis. as illegitimate are legitimated by subsequent marriage of their mothers, the per-centage of children born out of wedlock to the total births was 8·5 in 1856, and 10·1 in 1866. We have already spoken of the proportion of males and females among illegitimate children.

In the year 1851 the illegitimate births regis. in Lond. were but 4 p.c. of the entire births. In Paris from 1845 to 1853 they were, according to the French census report, 32½ out of every 100 births. It does not necessarily follow that Lond. is so much more moral than Paris—it may be that such births are much less frequently regis. in the former than in the latter city.—*A. G. Finlaison*, 1860.

During the 10 years, 1814–23, the proportion of illegitimate to legitimate births in *Geneva* was 12·75 p.c., or about 1 in 8. In the 10 years 1824–33, they were 7·57, or about 1 in 13; over the entire 20 years they were 10 (9·99) p.c. In *France* (as distinguished from Paris) during the period 1815 to 1833 the per-centage was 7·01. The proportions are always greater in towns than in country.

Statistical investigation has shown that there are many causes which may account for the differences that exist in the proportion of children born out of wedlock in various countries. England stands almost alone among the civilized nations of Europe in refusing legitimation, even at the wish of the parents, to children born out of wedlock. Again, the number of children born out of wedlock is never exactly known in any country.

The following T. shows the proportion of *illegitimate births* as regis. in various European countries at the periods stated therein :

	Period.	To 100 Births, including Stillborn.	To 100 Legitimate Births, including Stillborn.	To 100 Births of Living Children.
Austria	... 1830–47	... 10·12	... —	... —
Baden	... 1833–35	... 15·02	... —	... —
Bavaria	... 1826–51	... 20·58	... 25·91	... —
Belgium	... 1841–50	... 15·02	... —	... —
Denmark	... 1835–49	... 11·22	... 12·66	... —
England	... 1848–52	... —	... —	... 6·04
France	... 1836–53	... 7·30	... —	... —
Hanover	... 1824–53	... 10·17	... 11·31	... 9·34
Holland	... 1850–53	... 4·75	... 4·99	... 4·57
Norway	... 1846–55	... 8·93	... 9·81	... 8·77
Prussia	... 1816–52	... —	... —	... 7·94
Saxony	... 1835–49	... 14·56	... —	... —
Sweden	... 1776–1855	... 8·20	... 8·95	... 6·52

In the case of Prussia in the preceding T., the proportion is in relation to “100 births of living legitimate children.”

The following remarks, by one of the most able German statistical writers, Dr. Chr. Bernoulli, sums nearly all that remains to be said regarding this unfortunate class :

The proportion of illegitimate children cannot serve as a standard of morality; nevertheless a remarkable frequency of such children is without doubt in many respects a great evil. The invariable fact that the mort. among the illegitimate is far greater than among the legitimate, and that many more of them are stillborn, shows clearly enough how much more unfavourable their position is from the first. Who can doubt that their bringing up is harder and much more difficult? that the existence of a class of men, bound to society by few or no family ties, is not a matter of indifference to the State? The great majority of foundlings are illegitimate, which of itself shows how little, as a general rule, the mothers can or will care for these children. It is beyond doubt that fewer illegitimate children grow up to maturity; that they get through the world with much more trouble than children born in wedlock; that more of them are poor; and that therefore more of them become criminals. Illegitimacy itself is an evil to a man; and the State should seek to diminish the number of these births, and carefully inquire to what circumstances any increase is to be ascribed.

Stillborn.—We have seen from the preceding Tables that many of the Continental countries show the number of *stillborn* children—that is, of children born dead. No such returns are obtained in England or Scotland, and there are no means of ascertaining what are the numbers of such births, nor consequently their effect in these countries upon the relative proportions of illegitimate and legitimate children. It is sometimes alleged by Continental writers that their regis. would swell up the proportions of illegitimate births considerably. This is of course pure speculation. Yet we could wish that our returns were as complete as those of other countries.

In the year ending 30 June, 1868, there were regis. in Paris 4387 stillborn children. If the same proportion obtained in England, making allowance for difference of pop., they would amount to about 50,000 p.a., or nearly 1000 p. week.

Twin Births.—In the earlier obs. upon twin births many variations occurred. Thus Dr. Merriman quotes obs. which had been made by the following authorities, with the result placed opposite to each name :

Dr. Clarke, at the Dublin Lying-in Hospital	...	...	...	...	1 in 56½
Dr. Bland, at the Westminster Dispensary	...	...	...	...	1 „ 80
Professor Boer, at the Vienna Lying-in Hospital	...	...	...	...	1 „ 80
Dr. Denman, at the British Hospital	...	...	...	...	1 „ 91
Dr. Denman, at the Middlesex Hospital...	...	...	...	...	1 „ 93

Mr. Burns, in his own practice I in 93
 M. Ténon, Surgeon to the Salpêtrière at Paris I „ 96
 Madam Bovin, at the Hospice de la Maternité I „ 132

But since our system of gen. regis. has been in force, the statistics have become of a far more systematic and trustworthy character.

During 1852, in 6036 cases women bore *two* living children at a birth; so that 12,072 of the children born that year were twins. In accordance with the doctrine of chances, the cases of twins in which both children are boys, or both are girls, should be equal in number to the cases in which the children are of different sexes; instead of which, in 3587 of the above cases the children were of the same sex, and in the remaining 2159 only of different sexes.—15th R. of Reg.-Gen.

The following is the proportion of *twin births* out of every *million* of *deliveries*, in various European countries, during the periods stated in each case, viz.:

	Period.	Per Million.	Per Cent.		Period.	Per Million.	Per Cent.
Belgium...	1841-50	9234	0.92	Norway	1836-45	11,982	1.19
Denmark	1845-49	12,889	1.28	Saxony...	1847-49	12,222	1.22
Hanover	1853	5852	0.58	Sweden...	1776-1855	15,586	1.55
Netherlands...	1850-53	12,160	1.21				

Triple Births.—The instances of three children at a birth are so frequent as not to attract much attention, except that the Queen usually sends a bounty on such occasions; £1 for each child being we believe the ordinary rate.

During 1852, in 37 cases, women bore three living children at a birth, so that 111 of the children born that year were triplets. In 15 cases the triple births consisted of *three boys*; in 10 cases, of *three girls*; in 7 cases, of *two boys and one girl*; and in 5 cases, of *two girls and one boy*. The boys therefore preponderated; and the cases in which the children were all of the same sex occurred in undue numbers; for instead of being in the proportion of 15, 10, 7, and 5, the above numbers would have been in the proportion of 3, 3, 1 and 1, had the theoretical prob. not been interfered with by a natural law tending to create children of the same sex at one birth.—15th R. of Reg.-Gen.

The following is the proportion of *triple births* out of every million of *deliveries* in various European countries, during the periods stated in each case:

	Period.	Per Million.	Per Cent.		Period.	Per Million.	Per Cent.
Belgium	1841-50	97	.0097	Norway	1836-45	163	.0163
Denmark	1845-49	238	.0238	Saxony...	1847-49	76	.0076
Hanover	1853	510	.0510	Sweden...	1776-1855	248	.0248
Netherlands...	1850-53	167	.0167				

Mr. F. Hendriks remarks, with these statistics before him, “The phenomenon of three children at a birth has occurred much more frequently than might be imagined without reference to such statistics.”

Quartets.—The following is the proportion of cases of *four children at a birth* out of every million of *deliveries*, in various European countries, during the periods stated in each case:

	Period.	Per Million.	Per Cent.		Period.	Per Million.	Per Cent.
Belgium	1841-50	3	.0003	Saxony ..	1847-49	4	.0004
Netherlands...	1850-53	2	.0002	Sweden...	1776-1855	5	.0005

Quintets.—There are at least two cases on record of 5 at a birth, viz., a woman at Königsberg, 3 Sept., 1784; and the wife of Nelson, a tailor, in Oxford Market, in Oct. 1800.

BIRTH, EVIDENCE OF.—By the French *Civil Code* it is required that a declaration shall be made of every birth to the proper officer, within 3 days, *with production of the child*. The “act of birth,” setting forth the time and place of the event, sex and name of the child, and description of the father, is then immediately drawn up in the presence of two witnesses. It is entered on the register, and a copy kept by the parent (art. 55). In England the ordinary evidence of birth is the regis. [BIRTHS, REGISTRATION OF.]

BIRTH INS.—It does not appear precisely when the class of ins. here spoken of was first practised. In the Civil Statutes of the Republic of *Genoa*, under date 1610, we find among the classes of ins. specially prohibited, are those “upon the delivery of women”—indicating clearly, as we think, that such ins. *had* been practised in that or some other State. It was probably early in the reign of Queen Anne, or about 1709, that the practice commenced in England. After a careful investigation we do not find any projects of an earlier date. That the ins. was of a speculative character, and that, perhaps as a consequence, it extended itself very rapidly, are two facts which will become apparent as we proceed.

The scheme of ins. was very simple. A number of persons joined in a mut. contributionship. They were to pay either a fixed contribution at stated periods, or a certain agreed sum on the occurrence of every birth of a child to a member, until the birth of

their own child. The idea being to secure to each subs., on the birth of a child, such a sum of money as would provide for its rearing and education. Large sums were often named, such as £1000, £500, £250, or more or less. But the payment of the amount, whatever it might be, was always made to depend upon the subs. being "full." If not full, only a proportionate sum was to be received.

After a little time various precautions came to be introduced—as that the child should not be born within a certain number of weeks after commencement of membership. That the child should live 24 hours, etc., etc. Out of this a system of BAPTISMAL INS. arose, which we shall speak of in detail under CHRISTENING INS.

We propose to note the name and, as far as practicable, the date of estab. of each office, recording its peculiar features as clearly as the obscure character of many of the announcements will enable us to do so. It may be fairly assumed that there were a very great many more such offices than we can now trace, after a lapse of upwards of a century and a half.

The first birth ins. scheme we meet with is one known as the *Substantial and Profitable* Office "at an upholder's over against Tooley Church, in Southwark." It opened Four Subs. for the Ins. of Births—2 by claims, and 2 by dividends. This was in 1709.

It is necessary to explain at this point that the *dividend* plan was that under which the subscribers made periodic payments; and there were periodical divisions of the amount of subs. among the claims falling in between times of division. The *claim* plan was that in which the subs. bound themselves to pay up a certain amount to every claim falling in.

On the 22 Nov., 1710, there was opened at the Pennsylvania Coffee House, near the Royal Exchange on Cornhill, Three Subs. for Ins. on the Birth of Children. "Being the first extant of this nature."

On the 24th Nov., 1710, it was announced: "An Office of Ins. on the Birth of Children is opened this day, at Mr. Gray's, Glazier, in Swan's-yard, over against Somerset House, in the Strand; the office is up one-pair of stairs."

On the 30th Nov. there was opened by the *Profitable* So. (afterwards called the *Flower de Luce* Ins. Office) two Books on Births; one for £500, the other for £250, on birth of a Child.

On 30 Nov. the *Loyal United* So., held at Bourn's Coffee House (afterwards at Spread Eagle Court), opened two Books for Birth Ins.; one 5s. monthly and Div. on Birth; the other 10s. monthly and Div.

On the 2nd Dec. there was opened an Office for Birth Ins. in Mansell St., Goodman's Fields. Policy, 2s. 6d.; Contribution to each claim until the birth of own Child, 2s. 6d.; Claim, £250 if So. full, or in proportion.

On the 5 Dec. the *Perpetual* Office of Lond. Stone put forward a scheme of Ins. on Births by Tickets, on which was payable 2s. p. quarter; but what the advantages were does not clearly appear.

On the same day the *Society without Loss*, in the Little Piazza, Covent Garden, issued the following scheme of Birth Ins.:

Any person may ins. on Births of own, or any other persons children. 10s. p. week, dividend of £1000; 5s. p. week, div. of £500; 2s. 6d. p. week, div. of £250. Note.—If it should happen that but one claim should be made in any one week, which is very probable will sometimes be, the claimant may be entitled to £1750, if they have subs. to all three sos. for only £22 15s., which is the utmost charge any one can be at for the longest time in these proposals; so that this great advantage should encourage all that intend to subs. to do it forthwith, to prevent other ins. on them, which is so commonly done.

On the same day there was announced from the Bunch of Grapes, near Leg Tavern, Fleet St., an Office for Ins. on Births.

On the 8 Dec. the *Undoubted and Profitable* So., at King's Head Court, opened two Books on Births—£500 and £250.

On the 9th Dec. the *Honourable and Voluntary* So. announced the opening of an Office for Ins. on Births by Weekly Dividend, at 10s., 5s., or 2s. 6d. p. week.

On the same day the *Union* (No. 2) opened Three New Subs. on Births, on Claim System, viz., 5s., 5s., and £500; 2s. 6d., 2s. 6d., and £250; 1s., 1s., and £100.

On the 11 Dec. was opened at the *Flying Horse*, Pennington St., Three Offices of Ins. on Births. "One of 'em upon Claims; other two upon Monthly Dividends."

On the 12 Dec. there were opened at the White Lyon, King St., near Guildhall, 3 new Subs. on Births, on the *claim system*, viz., 5s. and 5s. with £500; 2s. 6d. and 2s. 6d. with £250; and 2s. and 1s. with £100.

On the 14 Dec. there were opened at the Pare's Coffee House, Broad St., Ratcliffe, 2 Societies on Births, 1100 members each. One of 2s. 6d. and one of 5s. a claim; and same for policy and entrance. The Subs. carried on here became afterwards known as *Advantageous* So.

On the same day was announced by the *Hand and Heart* So., East Harding St., Books for payment of £1000, £500, or £250, on Births of Children, by means of fixed weekly contributions.

On the 16 Dec. the *Faithful* Office, at Widow Pratt's Coffee House, Cateaton St., announced the following system of Birth Ins. "Any Insurer may enter upon 6 weeks, 2 months, and so on to 5 months, but no more, by which method offices may easily subsist, and be regularly carried on from year to year."

On the same day there were three Subs. opened at Charles St., near Soho Square, with the following announcement :

Whereas, there has been of late several societies erected in and near the Cities of Lond. and Westminster for advancing sums of money on the marriages of persons of both sexes, of which several have had the happy experience ; therefore that persons already in that state may not be unprovided with a thing of the same kind, there were three offices opened on Saturday, 16 inst., on the Births of Children.

On the 21 Dec. the *Flower de Luce* Ins. Office opened two new books for Ins. a weekly Dividend : one of £1000 if full, the other of £500 if full, on the Birth of a Child that shall live 24 hours.

The 1st 200 to stay 5 weeks from their entrance.

The 2nd 200 " 6 " "

The 3rd 200 " 7 " "

The 4th 200 " 8 " "

And all after, 9 weeks, and so to continue. "The 1st subs. can't pay above 2 or 3 weeks' contribution ; the last, not above 9, with many other advantages."

On the same day the *Secure* So., at the Hand and Glove, opened 2 Books for Birth Ins. for 2 months, by a weekly Div. of £500 and £200. "£1100 security already given to Trustees."

On the same day there was opened by the *Union* So., at the Black Lyon, Drury Lane, 3 new books for Birth Ins. by Dividends. First, 5s., 10s., and £1000 ; 2nd, half of this ; 3rd, half of second—payments after 23 Feb.

On the same day, by the *Original* Ins. Office (originally held at Mr. Gray's, Glazier, Swan Yard), there were opened two Books for Ins. of Births, for 2000 persons each. One 3s., 3s., and £300. The other 2s., 1s. 6d., and £150, or in proportion. The Claims to be made in 2 months.

On the 22 Dec. the *True British* Ins. Office, at the Vine, St. Michael, Crooked Lane, announced the Subs. on Births.

On the same day the *Profitable and Most Equitable* Ins. Office opened 3 Books for Birth Ins. Claims 8 weeks.

Opened on Monday, 1 Jan., 1711, by the *Original Loyal* So., sign of City of Chichester, near Spur Inn, Southwark, a Subs. for £500 Div. on Births for 6 weeks from date of their policies.

On the 2nd Jan. the *Loyal United* So. announced two Subs. for Birth Ins. : one 1s. p. claim ; the other 2s. 6d. "These Subs. are in a method more equal and reasonable than any other, being peculiar only to the office."

On 4 Jan. there was opened, at the *Golden Lion*, Drury Lane, an Office for Births at 2 months : 5s., 5s., and Claim £500 if full.

On the same day the *United* Co., at Green Lamp, Downing St., Westminster, announced : "Now erected, consisting of several substantial Directors, £3000 security to be given—3 Several Societies on Births . . . , so arranged as to suit the abilities of all sorts of persons."

On the 6 Jan. there was opened at the *Noble and Honest* So., at the Vine, Newgate St., 2 Offices on Births, for one month, being Dividends for £1000 and £500.

On the 9th Jan. there was opened by the *Friendly* So., at the Fish Market, Bloomsbury, 2 Subs. for Births. "All persons who come to subs. shall not be prevented in their due course by favor of any particular Friend."

On the same day there was opened at Smith's Office, at the Lock and Golden Key, Jermyn St., 3 Subs. on Births ; one 5s., other 2s. 6d., other 1s., per week ; weekly Div. "1st 50 Ins. to be one month before they are born."

On the 11 Jan. the *Grand Substantial* Office, held at the Blue Ball, St. Clement's Lane, issued the following notice :

Observe the Books are now open and subs. continued to be taken with extraordinary success. There are about 20,000 entries now actually upon the books and daily increasing, to the satisfaction of all persons concerned ; where every subs. may at their entrance be ascertained of their advantage, or the time of receiving. On Monday next will be paid off only on the 1s. book (belonging to the old 15s. set) to No. 400 ; on the new set to No. 175 ; on the 10s. to No. 175 ; and on Tuesday on the Books and all claims (except re-entries) made before the 24th Nov. on the old birth Book. Note.—Blank Lottery Tickets, etc., will be discounted as money in this office.

On the 13 Jan., at the *Three Crowns*, next Durham Yard, 3 Books on Births—weekly Div. "1st 200 may claim within 6 weeks from date of their policy."

On the 16 Jan. *The Just Proposers*, at the Haberdashers, St. Martin's Church Yard, St. Martin's Lane, opened a Subs. for Births by Claims and Div., 6 weeks. "No one to pay but for policy and stamps till after the 1st March next."

On same day, opened at The Carved Porter, near Jack's Coffee House, King St., on Marriages, Births, and Servants, by Div. From 5 March next, for Marriages and Births, Payments to continue until Insurer makes claim ; "which will happen in few days after the first payment to those that enter speedily."

On the 18 Jan., opened at Mr. Janeway's, Dogwell Court, Fleet St., "Several Offices for Ins. on Births."

On 20 Jan., *Original Loyal* So. opened 2 Subs. on Births. Claims £150 and £5—4 weeks.

Same day, *Hampshire So.*, Bell Court, near Aldersgate, on a Subs. on "*Birthdays of Single Persons*," Claim and Div. 2 months; and Births 6 weeks. [This appears to be some new phase in the business which we do not at present understand.]

On 22 Jan., at the Hand and Pen, Jewin St., by Horn Alley, 6 Subs. for Marriages and Births, by way of Claims and Div.—one month. "To pay for policies only till 19 Feb.—afterwards to pay subs."

Same day, by *British So.*, Hedge Lane, Charing Cross, 2 Subs. on Births.

On 23 Jan. appeared the following: "At the office, Ironmonger Lane, near Cheapside, proposals delivered out and entries received for estab. a *So. of Mutual Contributors* on the Births of Children, in a very easy, convenient, and beneficial method; and on secure and lasting foundation."

On 24 Jan. there was opened by the *Substantial So.* a General Ins. Office in St. Lawrence Lane, for Ins. on Births, etc., "where security will be given in the hands of the Trustees for £10,000, in land," etc.

On 27 Jan. was opened by *Society Without Loss*, in Little Piazza, Covent Garden, a new Subs. on Births; 7s. 6d. per week, div. of £750 "in month or 6 weeks. Note—At same place, a person will, on Thursday next, for 17s. 6d. paid by him, receive £60 17s. 6d."

About this date there was founded another *Nuptial So.* at Jacob St., near Dockhead, Southwark, and it opened 3 Subs. on Births. "1st, 100 subs., to go with child 2 months, and the child to live 21 days after the birth, etc."

On 29 Jan. opened at *Hand and Pen*, Jewin St., a Subs. on Births. Div. and Claim.

On 31 Jan. was opened by the *Safe and Secure So.*, next door to Red Cow, in Charles Court, in the Strand, a Subs. for Births.

Feb. 1 opened at the *Ship*, St. Bartholomew Cloisters, Smithfield, a Subs. on Births.

Same day, by the *Most Fair and Just So.*, Redcross St., 3 Subs. on Births, £1,000, £500, and £300.

Same day, by *So. of London Charitable Insurers*, Ivy Lane, Paternoster Row, an Office on Births, 2, 3, 4, and 6 months—£300. "The child to live 24 hours."

Some day, the *Amicable So.* of Bell Court, announce a Subs. on Births at 1, 2, 3, and 4 months.

Same day, at the Pastry Cooks, St. Martin's Court, St. Martin's Lane, were opened 3 Books on Births, 1 month.

On 3 Feb. the *Most Secure So.*, at the Ship and Fox, Strand, opened 4 Subs. on Births; 2 on Div. plan; 2 on Claim plan.

Same day, the *Third Secure So.*, at the Hand and Glove, opened 2 Subs. on Births, by claims.

Same day, the *Profitable and Secure So.*, at the Blue Ball in Arundel St., announced a Subs. on Births at 1 month.

On 5 Feb. there were opened at the *Feathers*, Shandois St., Covent Garden, 2 Subs. on Births by claims.

On 7 Feb., the *Fairest and Most Beneficial So.*, at Sword Cutters, Corner of St. Paul's Churchyard, opened a Subs. on Births, by way of contributions, to begin on 19 and 20 Feb. "The claim of Subs. entering before or on 17th inst. may become payable in a month or so."

Same day it is announced from the *Dover Castle*, Billingsgate, that an office of Ins. on Mar. and Births was opened, "where are several proposals both by weekly Div. and Claims. All entering before 18 inst. to have Policy for one month. No money to be paid before 5 or 6 March."

Same day the *Opposing Office*, Crown Court, announced a Subs. for Births with weekly or monthly Div. "This office meets with very great encouragement, by reason the like freedom is not given to the subs. in any yet extant of this nature; neither is there any office like it for profit and advantage to the subs. *No time is limited before . . . Birth of a Child.*"

On 8 Feb., *Faithful So.*, Pratt's Coffee House, announce a Subs. on Births, by div.

Same day was opened at *Union* office, Bishopsgate-without, 2 Subs. on Births, monthly div.

On 9th Feb. there was opened by the *Hampshire So.*, Bell Court, near Aldersgate, a subs. "*On Birthdays of all persons*" for 6 weeks.

On 15 Feb. there were opened at the *Feathers*, Shandois St., Covent Garden, 2 subs. on Births, weekly div.

Same day there was opened by *Grand Office of Ins.*, Crane Court, Fleet St., a Subs. on Births by way of Claims and Divs.

On 16th Feb. it was announced from St. Paul's Coffee House, that a subs. would be taken on Births, "Security in Lands £1500."

On 17th Feb. appeared the following announcement: "Not to ensnare any one, but for the profit of 1050 Subs. this day 17 inst., near the Dean's Head, in Dean's Court, in St. Martin's Le Grand, will be opened 16 Books on Ins. on Marriage and Birth—four for one month, and four for two months on each. Any person for 16s. may enter into 4 books, and if full will be entitled to £600, by the best and newest scheme extant."

Same day was announced from "King St. fronting St. Andrew St., near Seven Dials,"

as just opened, 3 Subs. on Births, weekly div. "Claims may be made in one month from date of policy."

On 20 Feb. there was announced from *Bee Hive So.*, at Golden Bee Hive by St. Clement's Church, Strand, an office on Births at 6 weeks.

Same day there was opened by the *Nonsuch & most advantageous So. on Marriage*, 4 Subs. on Birth of Children.

Same day by *Just and Substantial Office*, Parrot and Cage, St. Martin's Lane, Strand, Subs. on Births at 1, 2, and 3 months.

On 22 Feb. the *Conjugal Office*, Hanging Sword Court, Fleet St., announced a subs. to be taken in on Births, &c.

On 23rd Feb. the office at the *Cow's Face*, Crooked Lane, announced 3 Subs on Births. Div. 10s., 5s., 2s. 6d. — 2s. each policy.

Same day there was announced from the *Plummers* in Bow Lane, at the Corner of Watling St., a Subs. on Births by weekly Div.

On 24 Feb. there was announced from *Seven Stars*, Cheek Lane, Smithfield, a Subs. on Births, Birthdays, etc., by way of Claims and Div.

Same day it was announced by *Original Loyal So.* that persons might enter on Births at 8 weeks, "on 20 Feb. £30 Div. paid on birth of child."

On 24 Feb. the office at Dean's Head, Dean's Court, St. Martin Le Grand, announced: "Another new book on Births—3 months."

About this date the *Substantial So.* announced that all persons entering into the said Office on Births before 8 March should be at liberty to claim in 6 weeks from date of their pol.

On 27 Feb. the *General Office*, Talbot Court, Gracechurch St., opened a Subs. on Births, etc., by Div., some by 6 months, 3, 2, and 1.

On same day it was announced from *Martin's Office*, Essex Street, Whitefriars, that there had been paid to each Claimant for Div. on Births £39 7s. 6d. for £1 10s. charge.

On 28 Feb. the *Impartial and Friendly So.* opened 2 Subs. on Births by weekly Div. 2s. entrance; 5s. weekly—£500 or Div.; 2s., 2s.—£300 or Div.

About this date there was issued from the Ins. Office "at the Great New House, in Knowles Court (the sign of the Crown being at the Gate), in Little Carter Lane, near the East End of St. Paul's Church," a notice of Subs. at a certain charge upon Births at 6 and 8 weeks, on payment of 12s., 6s., 4s., or 2s., weekly, to divide in full £3600. And also upon Births at 36 weeks.

On 3 March the *Profitable So.*, Palgrave Head Court, announced a Subs. for Births at a certain charge (weekly Div.), 1, 2, 3 months; £1000, £500, £300.

We suddenly meet with a suspension of these schemes. The reason is at hand. About the 5th or 6th of March, 1711, there was passed the 9 Anne, c. 6, the 57 sec. of which, after reciting as we have already shown under APPRENTICESHIP INS., imposed a penalty of £500 upon any person erecting or setting up any such office after the 8th day of March then next.

Consequent upon the passing of this Act, the following very extraordinary Petition was presented to Parl.:

The case of Dorothy Petty, in relation to the *Union Society*, at the White-Lyon by Temple-Bar, whereof she is Director. The said Dorothy (who is the daughter of a Divine of the Church of England now deceas'd) did set up an ins. office on Births, Marriages, and Services, in order thereby to serve the public and get an honest Livelyhood for herself.

The said Dorothy had such success in her undertaking that more claims were paid, and more stamps us'd for policies and certificates in her office than in all other the like offices in London besides; which good-fortune was chiefly owing to the fairness and justice of her proceedings in the said business: For all the money paid into the office was entered in one book, and all the money paid out upon claims was set down in another book, and all people had liberty to peruse both, so that there could not possibly be the least fraud in the management thereof.

That the stamp office (by modest computation) hath received out of such offices, and chiefly out of the *Union So.*, Three or four hundred pounds weekly for stamps, as is well known in the Stamp-office.

That as a clause in a late Act, whereby such offices were suppressed, is worded, Hundreds of Her Majesty's subjects who were to be paid last by the rules of the said offices, lose vast sums of money, and others for being first entered will run away with all; for the said clause preserves the contracts made before the 8th day of March last, and in the same time disables the persons concerned from performing of them, they being not allowed to subscribe after that time under a severe penalty.

That the smallness of the sums paid into this So. from time to time by persons who cannot afford to pay £10 at a time, which is the least that can be put into the last Lottery, shows that this office can in no ways interfere with Publick funds or Lotteries: and the said director and all other parties concerned are so far from intending any such thing, that if it is thought of any advantage to the Gov., they are willing that the money that shall hereafter be paid into the said office shall be returned weekly into the Exchequer; and that small Exchequer bills or Tallies shall be taken for the same, and distributed in lieu of ready money amongst the claimants.

Therefore it is humbly hoped by a great many thousands of persons concerned in the said So., that the Hon. the Commons of Gt. Brit. will, by another clause in some other Act, give all parties concerned further time for winding-up their bottoms; and so explain the said former clause, as that none of Her Majesty's subjects already engaged in the said *Union So.* may be losers by it, especially since this said office is so fairly managed, and so useful to the public, as is before mentioned; and besides that it is (with submission) usual to rectify a mistake by a subsequent act committed in a former Act passed the same Sessions, which to omit other instances appears by the votes of this Hon. House of 13 April, 1711, which sets forth that a motion was made, That it be an instruction to the Committee, etc., To Rectify a mistake (in the very same Act hereinbefore mentioned), in relation to coals shipped for exportation to Ireland or the Isle of Man.

The system of Ins. on Births was not entirely suppressed by reason of the last-named Act. We find that at a quarterly meeting of the *Quarterly Contribution*, "kept at Ironmonger-lane," held in April, 1712, it was ordered that from and after 25 March then last, that on new-born children "no claim will be allowed to be good whose child shall not live 7 days after its birth; and the woman before delivery to continue pregnant with such child 24 weeks, exclusive the day of such entry or date of such their certificate." [GAMBLING INS.]

It may be well to note here, that many of the modern offices ins. either for or against the failure of issue, but under circumstances very different from those practised at the period which we have just passed in review. [ISSUE, INS. AGAINST.]

BIRTH-RATE.—The per-centage or proportion of births (ann. or otherwise) in relation to marriages; in relation to the number of females; or in relation to the entire pop.

BIRTHS, REGISTRATION OF.—In England, by the 70th Canon, and by the Statutes of 6 & 7 Wm. and Mary, c. 6 (1695), and 4 Geo. IV. c. 76 (1823), the minister of every parish was required to keep a regis. of births. By the *Registration Act*, 6 & 7 Wm. IV. c. 86 (1836), it was enacted that the parent or occupier of a house in which a child is born *might* within 42 days after the birth give notice to the district registrar, and *should* give such information on being requested by that officer to do so. No birth to be regis. after 6 months from date. Children born at sea were to be regis. in "Marine Regis. Book." This Act of 1836 has been frequently amended. Of these amendments, details will be given under REGISTRATION.

The form for general regis. of births comprises the time of birth, name, and sex of child; the name, surname, maiden surname, and profession or occupation of parents; the signature, description, and residence of the informant—who must be the father or mother, or in case of their inability the occupier of the house (sec. 20); the date of regis., and signature of the registrar; and also the child's baptismal name—if any be given within 6 months after regis.

The Act relating to the regis. of births, etc., in *Scotland*, is the 17 & 18 Vict. c. 80, passed in 1854. Its main requirements resemble those of the English Act. It has been amended by 18 & 19 Vict. c. 29 (1855); and 23 & 24 Vict. c. 85 (1860). [SCOTLAND.]

The Act relating to regis. of births in *Ireland* is 26 & 27 Vict. c. 11 (1863). Its requirements also resemble those of the English and Scotch Acts.

BIRTHS, TAXES UPON.—A tax was first imposed upon *births* in 1695, by 6 & 7 Wm. III. c. 6; but as *marriages* and *burials* were also made the subject of taxation on the same occasion, we propose to treat of the whole subject under MORTALITY TAX.

BISCHOFF, JAMES.—In 1834 he pub. a pamp., *Marine Ins.: their Importance, their Rise, Progress, and Decline, and their Claim to Freedom from Taxation*. This pamp. will be found appended to *Vaucher's Guide to Marine Ins.*, pub. 1834. In 1836 it was pub. in a distinct form.

BISHOP, J., was Sec. of *Victoria Life* (No. 1), from 1842 to 1844.

BISHOP, JAMES, was Sec. of *Mut. Benefit Ins. Inst.* from 1842 down to the date of its passing out of existence (1858).

BISHOP, JOHN, was Sec. of *Property Protection So.* from 1857 to the time of its discontinuing bus. in 1866.

BITES, DEATHS AND INJURY FROM.—We were much amused, not to say surprised, on looking over the out-patient accident books of the various London hospitals for two months, to find that of 124 "bites" of different kinds entered, 18 were attributed to men or women, which number was in excess of any other animal, with the exception of dogs, who were accused of inflicting the large number of 85. Horse-bites numbered 12; cat-bites, 5; the monkey and donkey being accused of one each. The two remaining were simply entered as "bites." We certainly have no reason to be proud of our exalted position.—*British Medical Journal*. The accident ins. cos. sustain a considerable number of claims yearly in consequence of bites of dogs, horses, and especially of pigs, the latter most dangerous.

BLACK BOOK OF THE ADMIRALTY.—A book in the Bodleian Library, Oxford, containing a collection of ancient sea laws, and among them the *Roles d'Oleron*. This book appears to have been commenced in the reign of Edward III., 1327–57, and to have been continued under Richard II. and Henry IV.; and its object was obviously to form a sort of manual or practical collection for guiding the Admiralty in its jurisdiction. The documents contained in it are in the old Norman French; but they were in the reign of Charles II. translated into English, by Thomas Bedford, upon the suggestion of Sir Leoline Jenkins, one of the Judges of the Court.

Amongst other things the book contains a record of the Inquest made in 1375 at Queenboro', by order of Edward III., before William de Latymer, Chamberlain and Keeper of the Cinque Ports, and William de Nevill, High Admiral. The articles propounded at that Inquest, 18 in number, had for their object the determining of points which had not been foreseen either by the *Roles d'Oleron*, or by the articles which had been added to them in the Black Book. They all relate to points in Maritime Law; as also do the 63 regulations subsequently entered.

The Black Book also contains the police and penal regulations, as they were recast

and digested into 59 articles in the Latin language, by Roughton. This portion of the work is authenticated by the subscription of the Duke of Norfolk, who was High Admiral in the beginning of the reign of Henry VIII. ; but it appears to have been afterwards revised and enlarged as new circumstances arose. An English translation of this section of the book was made in the reign of Elizabeth, when Sir Julius Cæsar was Judge of the Admiralty (about 1591) ; and another translation in 1639, in the reign of Charles I.

The old writers on Maritime Law, as, Seldon, Exton, Coke, and Prynne, have all availed themselves largely of the Black Book, which has in some sort answered the end of the *Ins. Ordinances* possessed by other maritime countries. We are glad to say that the work is now brought within the reach of all who care to consult it, by being pub. as one of the "Record Series" under the authority of the Master of the Rolls. The first vol. of the Black Book was thus pub. in 1871, edited by Sir Travers Twiss, Q.C., D.C.L., late H.M. Advocate-General. This ed. will be chiefly quoted in these pages.

BLACK DEATH—The *Black Death*, though usually treated as an aggravated outbreak of the Oriental plague, which is by very general consent traced to Egypt as its birthplace, has had assigned to it an origin more remote. Hecker fancies he finds the source of it in China, in 1333, fifteen years before it showed itself in Europe ; and Anglada traces it by three distinct routes from Black Cathay ; the northern route by Bokhara and Tartary, the Black Sea and Constantinople having brought it by the Bosphorus into the Mediterranean, and so into Europe. In the interval between 1333 and 1347 China was visited with drought, famine, torrents of rain, floods, earthquakes, swarms of locusts, and pestilence ; and at length, in 1348, Europe began to suffer by the same visitations. The Island of Cyprus was converted into a desert by a frightful earthquake, hurricane, and inundation following the outbreak of the plague ; and there was observed—what was noticed in many countries and cities afterwards—a peculiarly offensive state of the air, sometimes spoken of as a stinking mist, possibly due to the dead locusts, which had "never perhaps darkened the sky in thicker swarms," and by countless unburied bodies of men and beasts. On the 25th Jan. of the same year (1348), an unexampled earthquake lasting several days visited Greece, Italy, and the neighbouring countries, shaking down or swallowing up whole villages, and inflicting severe injury on every large city. Others occurred from time to time in all parts of the Continent of Europe, and in England up to the year 1360.

The Black Death reached England in Aug. 1348, appearing first in the county of Dorset ; thence spreading through Devon and Somerset, to Bristol, Gloucester, Oxford, and Lond. ; in fact through the whole country. It took three months to reach Lond. ; few places are thought to have escaped, and *only a tenth part of the inhabitants were thought to have remained alive*. Dr. Guy, from whose work on public health we have selected the preceding outline, as likely to be less exaggerated than accounts from other sources, says there is no room to doubt that the symptoms of the Black Death were those belonging to the Oriental plague. [PLAGUE.] Those who desire more detailed information may consult the work of Hecker, a German physician, "*The Black Death in the 14th Century*," translated into English in 1833 ; or Dr. Guy's work, "*Public Health*," 1870. Hecker has estimated the loss of life in Europe from this visitation at 25 millions ; other writers as high as 40 millions. Asia and Africa, including China, 37 millions.

A pestilential visitation in Dublin in 1866 received the name of the Black Death. Dr. Stokes suggests as an appropriate name for the disease *malignant purpuric fever* ; it has also been designated *black fever*, and *cerebro-spinal typhus*, etc., etc.

BLACK MAIL.—An impost levied in former ages by Scottish Barons and Border Knights, now said to be sometimes levied by Knights of the Quill. Happily it is a custom nearly played out.

BLACK, MORRICE ALEXANDER, F.I.A., Act. of Australian Mut. in Sydney since 1868. Mr. Black entered the *Aberdeen Mut.* in 1846. He studied actuarial science under Mr. Yeates, then Act. of the *Northern*. A few years later he came to Lond., and after a short term of service in the *Anchor*, he entered the *Law Property* in 1851. In 1857 he became Chief Clerk and Act. of the *English Widows' Fund*, and there learnt that honourable dealing is sometimes very much overlooked in public bodies. He made a valuation of the pol. in the office upon an understanding that he was to be remunerated for so doing. The valuation was skilfully and properly made, except in one minor matter, where he acted under instructions from his superior officer ; but Mr. Black was never paid for his labour. He had recourse to a Court of Law, but only to find, as thousands previously had found, that law and justice are by no means one and the same. It was upon the incidents of this case—*Black v. English Widows' Fund*—that the late Prof. De Morgan based his letter—*Warning to Actuaries*.

Towards the end of 1858, Mr. Black became Act. of the *Lond. and Yorkshire*. In 1864 he became Sec. of the *Home and Colonial*.

In 1861 Mr. Black pub. : *The Assu. of Diseased and Doubtful Lives on a new Principle*. This principle will be explained in detail under DISEASED LIVES, INS. OF. In the mean time we may here state that the subject received a good deal of attention ; and its merits or otherwise were canvassed in the *Assu. Mag.* during the year 1863 [vol. x. pp. 268 and 350]. Several of the English offices still follow Mr. Black's method.

In 1863 he pub. a *Chronological and Statistical Chart of Life Offices Estab. in the United Kingdom from 1706 to 1863*. A useful compilation.

In 1867 *An Analysis of Marine Ins. Cos. Accounts, showing their Profits and Losses, Liabilities and Assets; together with Tables Illustrating the Combined Experience of Twelve Companies.* A most instructive and useful pub. to all engaged or interested in Marine Ins.

BLACK SEA.—This sea is proverbially subject to furious gales, as even the most experienced marine ins. underwriters know to their cost. A dreadful storm raged from 13 to 16 Nov., 1854, causing great loss of life and shipping, and sacrificing valuable stores for the allied armies. By the treaty of 1856 the Black Sea was opened to the commerce of all nations.

BLACK, WILLIAM, M.D., pub. in 1781, *Observations, Medical and Political, on the Smallpox and Inoculation; and on the Decrease of Mankind at every Age, with a Comparative View of the Diseases most fatal to Lond. during 90 years; Including an Attempt to Demonstrate in what manner Lond. may save near 2000, Great Britain and Ireland between 20,000 and 30,000, and Europe about 390,000 lives ann.*

In 1788 he pub. *A Comparative View of the Mort. of the Human Species at all Ages; and of the Diseases and Casualties by which they are Destroyed or Annoyed.*

These works will be noticed under DISEASES; LOND.; MORT. OBS.; POP.; etc.

BLACKBURN FIRE AND LIFE INS. CO.—This scheme was projected in 1845, but does not appear to have made further progress. The proposed cap. was £500,000.

BLACKSMITHS.—The number of males of 20 years and upwards following this sturdy occupation in 1851 was 75,998; of whom 1409 died during that year. The mort. to 1000 living at each of the decennial ages was as follows:—Between 25 and 35, 8; 35-45, 12; 45-55, 17; 55-65, 37; 65-75, 74; 75-85, 167; 85 and upwards, 331. Thus above 55, the mort. is over the average of all occupations, and increasingly so as the ages advance; but this prob. from its having been so light in the younger ages. In the supplement to the 25th R. of Reg.-Gen. (1864) the ann. mort. p.c. in the years 1860-61 was found to be as follows:—Between ages 15-25, .527; between 25-35, .836; 35-45, 1.088; 45-55, 1.742; 55-65, 3.139; 65-75, 17.717; 85 and upwards, 36.194.

BLADDER, DISEASES OF.—See CYSTITIS, GRAVEL, STONE, URINARY ORGANS.

BLAKEMORE, Mr., was for some years (between 1850 and 1857) Superintendent of Agents for *Legal and Commercial.*

BLAND, ROBERT, M.D., F.R.S.—In the *Phil. Trans.* for 1781 appeared by this writer, *A Table of the Chance of Life from Infancy to Twenty-Six Years of Age.* [MORT. TABLES.]

BLAND, WILLIAM HENRY, late of the *Essex and Suffolk Equitable Fire*, where he had been as Clerk and Assistant Sec. for upwards of 40 years. He died in 1868, aged 60.

BLANDFORD (Dorset).—In June 1731 a fire broke out here which destroyed the greater part of the town. Some of the property was ins., and a good deal of money was raised on "King's Briefs." [FIRE INS., HIST. OF.] In 1735 there was pub. *A Brief Account of the Dreadful Fire at Blandford Forum, in the County of Dorset, which happened June iv., M.DCC.XXXI. Together with a Sermon Preached at Blandford, June 4, 1735: being a day set apart by the Protestant Dissenters there for Prayer and Humiliation under the Remembrance of that sad Providence. To which is added a Serious Address to the Inhabitants of that Town,* by Malachi Blake. "This Treatise is not only calculated for the inhabitants of Blandford, but proper for other families also." A remarkable incident arising out of this fire was that out of 150 persons lying ill with the smallpox, and all of whom had to be removed into the open air, under hedges, arches, etc., and some of them left for several days, only 1 died. [INOCULATION.] [SMALLPOX.]

BLANE, SIR GILBERT, M.D., a noted physician, who died in 1834. He pub. the following works bearing upon subjects treated of in this work. In 1785 (1.) *Observations on Diseases Incident to Seamen*; in 1811 (2.) *A Series of Addresses to the Public on the Practice of Vaccination*; in 1818 (3.) *A Statement Respecting the Contagious Nature of Yellow Fever*; in 1822 (4.) *A Work on the Diseases of Lond.*; in 1830 (5.) *A Brief Statement of the Progressive Improvement of the Health of the Royal Navy at the end of the 18th and beginning of the 19th Centuries*; in 1832 (6.) *Warning and Admonition to the Brit. Public on the Intro. of the Cholera of India.* Mr. Hodge frequently quotes from Sir Gilbert's writings in his able papers on the *Mort. arising from Naval Operations.* [Assu. Mag., vol. 6, etc.]

BLANKET POLICIES (FIRE) are such as improperly cover different kinds, or different pieces of property, under the same clause. For instance, "£1000 on *building* and *stock*;" or "£1000 on *two buildings*;" or again, "£1000 on *stock* and *fixtures*." It is bad underwriting to issue these. Let each clause of your pol. cover a *specific* sum on each particular kind or piece of property. For instance, "£500 on *building*," and "£500 on *stock*;" or "£500 on each of *two buildings*;" or "£500 on *stock*," and "£500 on *fixtures*," as the case may be.—*Rogers on Fire Underwriting.* The designation "Blanket Pol." is, we believe, confined to the American Continent.

BLANKS.—What we term "Forms" here, are called "Blanks" in the U.S. Thus, when a person desires to ins., he is requested to fill up the proper *blank*. We do not know that there is much choice between the terms. It would be well if the practice of the two countries were uniform.

BLANK POLICIES.—It appears to have been a custom in early days to leave "blanks" in marine policies; hence a ship was insured from London to ———. The practice arose with a view to prevent capture by the destination of the ship being betrayed. In such

The *Ins. Ordin. of France*, 1681, says: "We prohibit all policy clerks, secretaries of ins. chambers, notaries or brokers, to have policies underwritten in which anything is left in blank, under the penalty of costs or damages. . . . Lines must be drawn wherever there are blanks to prevent anything being inserted afterwards."—*Valin's Comm.*

[illegible]

Level portions of the German States	...	...	...	...	...	1 in 950
More elevated portions of Germany	...	...	...	...	...	1 in 1340
Prussia (average of census in 1831, 34, and 37)	...	...	...	...	...	1 in 1401
Alpine Regions (1831)	...	...	...	...	...	1 in 1500
Sweden	...	...	...	...	...	1 in 1091
Norway	...	...	...	...	...	1 in 482
United States (1860)	...	...	...	...	...	1 in 2470

The U. S. census report of 1860 contains the following :

The proportion of the blind in each of the U.S. to the pop. considered in relation to geographical position, shows that whatever causes may have modified these proportions, *climate* has had little or no influence ; and that the tables of Dr. Zenné, of Berlin, so much referred to as showing the proportions of the blind according to *latitude*, are entirely inapplicable to the U.S.

It may interest the reader to know that the learned Dr. Zenné's tables furnish the following proportions :

In latitude 20 to 30	...	1 in 100	In latitude 50 to 60	...	1 in 1400
In latitude 30 to 40	...	1 in 300	In latitude 60 to 70	...	1 in 1000
In latitude 40 to 50	...	1 in 800			

Dr. Guy is of opinion that from one-half to two-thirds of our blind pop. formerly owed their sad privation to *smallpox*—blindness being one of its worst secondary consequences.

BLINDNESS, INSURANCE AGAINST.—The *Professional Life*, founded in 1847, undertook to "grant pol. at moderate rates, by which annu. may be secured to persons should they at any future time be afflicted with paralysis, *blindness*, or any other visitation which may render them permanently infirm and helpless." We do not find any indication of what the rates were to be.

Ins. against blindness appears a most legitimate branch of bus. ; and a very small prem. would be sufficient to cover the risk, provided the office exercised due care in the selection.

The *Accident Ins. Co.* provides "specific compensation" in case of the loss of one or both eyes by accident ; but the risk is not separately ins. against.

BLISS, GEORGE, JUN., counsellor-at-law, pub. at N. Y. in 1872, *The Law of Life Ins., with a Chapter on Accident and Guarantee Ins.* We hear this work spoken of with high commendation ; we hope to quote it in these pages.

BLOCKADE (from *bloccato*, an Italian military term).—The disposition of troops and armed vessels so as to cut off all external communication with an enemy's port, fortress, city, etc. The practice is said to have been introduced by the Dutch about 1584. the term is now generally applied to the blockade of a port by armed vessels. The two essential circumstances necessary to make good a blockade are—(1) That there be actually stationed at the place a sufficient force to prevent the entry or exit of vessels ; and (2) that the party violating it shall be proved to have been aware of its existence.

With regard to neutral vessels lying at the place where the blockade commences, the rule is that they may retire freely after the notification of the blockade, taking with them the cargoes with which they may be already laden ; but they must not take in any new cargo.

The effect of a violation of blockade to the offending party when captured is usually the condemnation of both ship and cargo. If, however, it can be shown that the parties to whom the cargo belongs were not implicated in the offence committed by the master of the ship, the cargo will be restored. It has sometimes, on the contrary, happened that the owners of the cargo have been found to have been the only guilty parties, in which case the judgment has been for condemnation of the cargo and restitution of the ship.—*Wharton's Law Lex.* [CAPTURE.] [PRIZE.]

BLOODY FLUX.—An old Saxon *alias* for Dysentery. It very frequently occurs in the earlier Bills of Mort.

BLUE DISEASE.—Blue jaundice of the ancients ; a disease in which the complexion is tinged with blue or venous blood. [CYANOSIS.]

BLYDENBURGH, J. W., pub. in New York, in 1844, a work on *Usury*. [USURY.]

BOARD.—An assembly of directors and officers for the despatch of bus.—usually called a board meeting. Boards are generally held weekly, on a fixed day and hour ; but sometimes fortnightly, or monthly. [DIRECTORS.]

BOARD OF TRADE.—A Committee of the Privy Council appointed for the consideration of commercial matters. This Board exercises, or has the authority to exercise, various important powers in relation to ins. asso., either in common with other joint-stock asso., or specially.

Under the 56th sec. of Cos. Act, 1862, "The Board of Trade may appoint one or more competent inspectors to examine into the affairs of any co. under this Act. and to report thereon, in such manner as the board may direct, upon the applications following."

In case of an ins. co., registered under that Act, having its capital divided into shares, upon the application of members holding not less than *one-fifth* part of the whole shares of the co. for the time being issued :

Sec. 57. The application shall be supported by such evidence as the Board of Trade may require for the purpose of showing that the applicants have good reason for requiring such investigation to be made, and that they are not actuated by malicious motives in instituting the same. The Board may also require the applicants to give security for the payment of the costs of the inquiry before appointing any inspector or inspectors.

Sec. 58. It shall be the duty of all officers and agents of the Co. to produce for the examination of the inspectors, all books and documents in their custody or power. Any inspector may examine upon oath the officers and agents of the Co. in relation to its bus., and may administer such oath accordingly. If any officer or agent refuses to produce any book or document hereby directed to be produced, or to answer any question relating to the affairs of the Co., he shall incur a penalty not exceeding £5 in respect of each offence.

Sec. 59. Upon the conclusion of the examination the inspectors shall report their opinion to the Board of Trade; such report shall be written or printed as the Board of Trade directs. A copy shall be forwarded by the Board of Trade to the registered office of the Co., and a further copy shall, at the request of the members upon whose application the inspection was made, be delivered to them, or any one or more of them. All expenses of and incident to any such examination as aforesaid shall be defrayed by the members upon whose application the inspectors were appointed, unless the Board of Trade shall direct the same to be paid out of the assets of the Co., which it is hereby authorized to do.

The Board of Trade has other powers under this Act not material to our present purpose. Under the Life Assu. Cos. Act, 1870, there are the following provisions :

16. The Board of Trade may direct any printed or other documents required by this Act, or certified copies thereof, to be kept by the Registrar of Joint-Stock Companies or other officer of the Board of Trade; and any person may, on payment of such fees as the Board of Trade may direct, inspect the same at his office, and procure copies thereof.

17. Every statement, abstract, or other document deposited with the Board of Trade or with the Registrar of Joint-Stock Companies under this Act shall be receivable in evidence; and every document purporting to be certified by one of the secretaries or assistant secretaries of the Board of Trade, or by the said Registrar, to be such deposited document, and every document purporting to be similarly certified to be a copy of such deposited document shall, if produced out of the custody of the Board of Trade or of the said Registrar, be deemed to be such deposited document as aforesaid, or a copy thereof, and shall be received in evidence as if it were the original document, unless some variation between it and the original document shall be proved.

The 24th sec. of the same Act provides as follows :

The Board of Trade shall lay annually before Parliament the statements and abstracts of reports deposited with them under this Act during the preceding year.

The first return under this Act has recently [May, 1872] been issued.

BOAT.—A term used in a general sense to denote any small ship or vessel, whether open or decked, and which may be propelled by oars, by sails, or by steam. Boats are accordingly of very different forms and constructions, having reference to the different purposes they are intended to serve. Under this term are comprehended barges, cutters, pinnaces, yawls, etc. The boats which constitute part of the proper outfit of a ship are included in the ins. of such ship. “Steam-boats,” as applied to large vessels, is a misnomer.

BODILY FORCE.—It is manifest that the power of a nation depends not only upon the numbers of its people, but on the value and force of each of its individuals included in the enumeration. If they are feeble, the whole is weak; if they are strong, the whole is powerful; and in the precise proportion that these elements of sickness or health, weakness or vigour, are presented by the individuals, the general power of the community is diminished or increased.—*Dr. Farvis*, 1860. [HEALTH.] [SICKNESS.]

BODY, HUMAN.—See HUMAN BODY.

BODY POLITIC.—A nation; also a corporation.

BOILER INSURANCE.—See STEAM BOILER INS.

BOILER INSURANCE AND STEAM POWER CO., LIM., founded in Manchester in 1865, to take over and carry on the bus. of the *Steam Boiler Assu. Co.*, estab. in 1859. The cap. of the present Co. is £250,000, in 50,000 shares of £5; first issue 40,000 shares. Its objects are: (1.) Ins. steam boilers, with the buildings and machinery connected therewith, and any property or goods stored or contained in such buildings, against damage from explosion of boilers or collapse of flues. (2.) Repairing, or altering or keeping in repair, boilers. (3.) Inspecting steam boilers and steam engines, and advising in all matters relating to the safe and economical production and use of steam. (4.) Supplying manufacturers and others with steam power, etc. The prosp. says :

This Co. was formed . . . for the purpose of affording to the users of steam power efficient periodical inspection of their boilers, combined with ins. against all damage resulting from explosion; with a view of preventing, as far as practicable, those frequent disasters so destructive both to life and property.

During the first few years its operations were chiefly confined to the manufacturing districts of Lancashire and Yorkshire; but the principles upon which it was formed and the advantages offered were attended with such marked success, that the directors considered it necessary in the year 1865 to increase the cap. of the Co., etc.

The title of the Co. was then changed, . . . and its operations were extended to all parts of the kingdom. The Co. has now well-qualified inspectors residing in all the principal districts where steam power is used; and the advantages to be derived from periodical inspection, combined with ins., are daily becoming more appreciated by the public.

The number of steam boiler explosions which occur in this country is much larger than would be supposed by a casual observer. This Co. has kept note of some 500 which have occurred during the past 10 years; and there are many of which the public hear little or nothing. The loss of life resulting from the 500 explosions named has exceeded 800 persons. The fact that the number of explosions experienced by this Co. has been below the general average, is considered by the officers of the Co. to be an evidence of the benefits resulting from periodical inspection. The average number of inspections *annually made by the Co. exceeds 55,000*. Upwards of 22,000 boilers have been insured with the Co.

The actual guarantees afforded to insurers in this Co. are: (1.) Responsible inspection of the boilers ins., by officers of the Co., not only at periodical intervals, but at any other

time when necessary, with written reports of results. (2.) The risk to the Co. of all damage otherwise than by fire that may result from explosion of boiler, or collapses of the flues, not only to the boiler, but to the surrounding property up to the amount insured. The Co. further undertakes, by special contract, all repairs of boilers necessitated by "wear and tear"; also the periodical inspection and indicating of engines, etc.

The following is the T. of prems. for ins. against damage from explosion of boiler and collapse of flues, including periodical inspection and reports on the condition of the boilers :

Pressure per Square Inch on Safety Valves.	TERM ONE YEAR.						TERM FIVE YEARS.						Per cent. per Annum.
	Class A.			Class B.			Class A.			Class B.			
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
Not exceeding 20lbs.	0	15	0	1	0	0	0	15	0	1	0	0	„
Above 20lbs. up to 40lbs. ...	1	0	0	1	5	0	0	18	0	1	3	0	„
Above 40lbs. up to 60lbs. ...	1	5	0	1	10	0	1	2	0	1	7	0	„
Above 60lbs.	1	10	0	1	15	0	1	6	0	1	11	0	„

Example.—1. Boiler Class A, working at 60lbs. pressure, amount, £200. Prem., £2 10s. p.a. 2. Boiler Class A, working at 50lbs. pressure, insured for five years, amount, £300. Prem., £3 6s. p.a.

The Co. also insures boilers, with internal furnaces, if in good condition, and adapted to the pressures required, up to the amount of £300 for an ann. prem. of £1 11s. 6d. each. The ins. in this case covers all damage to the boiler itself, its mountings, and the adjacent property, up to the full amount ins., *in case of actual explosion*; but this class of ins. does not cover any damage to, or injury of, the internal flues in case of collapse—accidents of very frequent occurrence, resulting from deficiency of water, owing to negligence on the part of the attendants.

Then again there may be *inspection* without ins. The rate for this is 17s. 6d. per boiler p.a.; or in case of a number of boilers a special contract may be made. This payment secures periodical inspection every 3 or 4 months, and a written report containing information and advice.

The Co. also issues pol. of ins. on the lives of enginemen, stokers, and all persons attendant upon boilers and engines; also workpeople employed in manufacturing estab. liable to injury or death from boiler explosions.

It would be difficult to conceive any inst. which has been productive of more real good than this particular Co., and impossible to find one which has been attended with more marked financial success. This success is mainly due to practical management, especially to the able and unceasing devotion of its Chief Engineer and Man., Mr. R. B. Longridge. The ann. reports of this gentleman, prepared for his board, and printed for more general use and reference, are regarded not only with great interest by those immediately concerned, but have a far wider range of usefulness in the information they convey regarding the *causes of explosion* in the boilers which come more especially under his notice by reason of disaster.

The subject of ins. steam boilers will be treated of at large under STEAM BOILER INS. **BOILING TO DEATH.**—The punishment for poisoning inflicted by 22 Henry III. c. 9 (A.D. 1267), which was repealed by 1 Edward VI. c. 12 (1547).

BOILS (Class, ZYMOTIC; Order, *miasmatic*) are not generally considered dangerous, yet every year some deaths are recorded as resulting from them. In 1867 there were 11—males, 7; females, 4. In the case of the males, 3 were in the first year of life; 1 between 45 and 55; 2 between 55 and 65; 1 between 75 and 85. In the case of the females, 1 was in the first year, 1 in the second; 1 between 10 and 15; 1 between 35 and 45.

BOLOGNA, STATUTE OF, enacted prior to 1408; printed 1498.—This is supposed to contain a reference to the practice of marine ins. See GENOA, MARITIME STATUTES OF.

BOLTON AND SOUTH LANCASHIRE FIRE INS. CO.—This scheme was projected in 1845, but does not appear to have taken root. Its proposed cap. was £500,000, in shares of £20.

BOMBAUGH, C. C., M.D., the accomplished ed. of the *Baltimore Underwriter*.—He was a medical officer in the U.S. army, and on retiring in 1865, with impaired health, entered upon his present enterprise, in which we wish him permanent success. Mr. Bombaugh is medical examiner for several life offices.

BOMBAY.—Mr. Hewlett, the health officer of the city of Bombay, in his report for the year 1867, states that the number of deaths regis. during that year amounted to 15,500. There has been a great improvement in the public health since 1865, when the deaths were 28,631, out of a pop. of about 816,562. The ann. mort. in each of the four years 1864–7 respectively to 1000 of pop., was 30·6, 35·0, 20·7, and 19·0. The mort. from the principal epidemic diseases in each of these years, to 1000 living, was as follows: Cholera, 5·9, 3·5, 4 and 1; smallpox, 2·1, 7, 1·3, and 1·3; measles, 2, 5, 6, and 0·2; fever, 15·4, 22·9, 12·1, and 6·9. The deaths regis. in 1867 from each of these diseases

were: Cholera, 111; smallpox, 1055; measles, 24; and fever, 5674. Of the deaths from smallpox 836 were those of children who had not completed their ninth year. Vaccination was not compulsory, and during the last ten years no less than 9857 persons had died from this disease. Including the stillborn, the deaths numbered 16,088; 11,890 bodies were buried, 3354 burnt, and 844 exposed to carrion birds. Mr. Hewlett states that the Parsee towers of silence should be closed; such an intelligent race as the Parsees should abandon a mode of disposal of their dead which, after all, is only a continual reminder of the tyranny of the ancient oppressors of their race in Persia before their migration. Of the 15,500 deaths, 1836, or 12 p.c., were those of infants under a month old; 3388, or 22 p.c., were those of children aged one month and under 2 years; 1204, or 8 p.c., were children aged 2 and under 5 years; 45 p.c. of the total deaths were those of children under 10 years of age. In the district of Parell, where there was not one built drain, the mort. in 1866 reached the high proportion of 40·1 per 1000; and in the Esplanade district, where two native infantry regiments were quartered, the mort. was 35·2 per 1000. These regiments were stationed in close proximity to a huge cesspit; out of 227 deaths in the district last year 163 occurred among persons in the regimental and other lines, 75 deaths being caused by fever.

The mort. p.c. among the different castes or races in 1867 was as follows: Boodhists and Jains, etc., 7·02; Brahmuns, 1·38; Lingaets, 3·63; Bhatias, 1·04; Hindoos of other castes, 1·50; Hindoo out-castes, 3·67; Moosulmans, 2·65; Parsees, 1·71; Jews, 2·86; native Christians, 2·57; Indo-Europeans, 1·69; Europeans, 2·57; negro-Africans, 5·30; Chinese, 3·63. Of the 816,562 inhabitants of the town of Bombay 61,994 are returned as belonging to Asarcophagous castes, or persons of non-flesh-eating races; the mort. among these was 2·05 p.c., while the mort. among the Sarcophagous castes, or flesh-eating races, was 1·89 p.c. The meteorological returns record the mean barometric pressure in the year 1867 at Colaba Observatory at 29·823 inches; the mean temperature of the air in the shade was 78·9 degrees; the absolute range was 30·8 degrees. The mean dew point was 71·5 degrees. 65·48 inches of rain fell at Colaba in 110 days.

We propose to give the T. of Mort. for *Bombay*, and much other important information regarding European health and longevity there, under INDIA.

There is a very complete fire brigade in this city.

BOMBAY LIFE ASSU. CO., founded in Bombay, 1 May, 1823. The Co. issued no whole-term L. pol. It had three classes of short-term ins., viz.:—For one year, not renewable without a fresh certificate of health, prem. aged 30, $3\frac{4}{10}$ p.c. For 3 years, renewable without fresh certificate of health, ann. prem. aged 30, $3\frac{7}{10}$ p.c. For 5 years, renewable without fresh certificate of health, ann. prem. aged 30, 4 p.c.

BOMERIE, from the Flemish word *Bome*, which signifies the keel of a vessel. It is variously written by different authors *Bomerie*, *Bodmerie*, *Boddemerii*. A term of marine commerce particularly in use on the coasts of Normandy. It is a sort of contract or loan at a gross average, assigned to the keel of the vessel; it differs from *Assu.* in that there is nothing due in virtue of this contract in case of shipwreck, but only when the vessel arrives safely in port.—*Savary*. [BOTTOMRY.]

BON ACCORD L. AND F. ASSU., GUARANTEE, REV., AND ANNU. CO., founded in Aberdeen in 1845, with an authorized capital of £500,000 in 25,000 shares of £20. The D. of sett. recites: "That a new assu. co. in Aberdeen, for the purposes after mentioned, will be of local and public utility, as well as of advantage to the partners," etc. The L. pol. of the Co. were to be absolutely indisputable. Mr. William Gerden was Sec. In 1849 the bus. of the Co. was trans. to the *Northern*. The Co. was conducted on the proprietary system.

BON ACCORD MARINE INS. CO., founded in Aberdeen in 1839, and continued its bus. down to 1848, when it passed into liquidation.

BONA.—This term, according to the Civil Law, includes all sorts of property movable and immovable.—*Story's Conflict of Laws*. **BONA MOBILA**; movable effects and goods. **BONA PERITURA**; perishable goods. **BONA VACANTIA**; stray goods, those things in which nobody claims a property, and which belong to the Crown by virtue of its prerogative.—*Blackstone*.

BONA FIDE.—With good faith; implying the absence of all fraud or unfair dealing or acting, whether it consists in simulation or dissimulation. It can best be defined with reference to things opposed to it, namely *mala fides*, *dolus malus*, both of which phrases, and specially the latter, are often used in a technical sense. It is of the essence of ins. contracts of all descriptions that they be entered into *bond fide*.

BOND [from the French *to bind*].—In Law a deed whereby the obligor, or party binding himself, obliges himself, his heirs, executors, and administrators to pay a certain sum of money, called the penalty, to another (the obligee) at a day appointed. There is a condition added that if the obligor does some particular act the obligation shall be void; otherwise shall remain in full force. Annuities are often secured under bonds of this character—hence *Annuity Bonds*. A bond may be absolute or conditional. See also POST OBIT BONDS.

BOND CREDITOR.—A creditor whose debt is secured by a bond.

BONDING OF GOODS.—See GOODS IN BOND.

BONDSMAN.—A surety.

BONUS [from the Latin, *Good*].—A prem. given in add. to int. for a loan, or for a privilege, as the Charter of a bank ; a boon—*Bouvier*. A prem. ; an advantage.—*Wharton*. An extra dividend to the shareholders of a joint-stock co., out of accumulated profits.—*Gilbert*. A sum of money paid to the agent of a co., or to the master of a vessel in add. to a share in the profits, or to stated compensation by the month, year, etc.—*Webster*. The word does not even appear in the earlier eds. of Johnson ; or in Walker, and some other dictionaries.

We see by the foregoing, that the word **BONUS**—a word bearing in the eyes of most policy-holders, not to say of ins. officials also, the greatest signification of any word in the ins. vocabulary—does not appear at all in some dictionaries ; and by none of the leading lexicographers is it rendered in the sense in which it is generally understood here, viz., as *an abatement or return of prem. ; or accession or advantage to a pol. of ins.* In the U. S. the word *Dividend* is employed.

The periodical investigations into the affairs of L. offices—now usually spoken of as *bonus investigations*—did not really originate in such an object. They were advocated first by Dr. Price, and afterwards by Dale and others, as a means of testing the sufficiency of the reserve fund of a L. office to meet the generally increasing liability which must fall upon it. The test so instituted of course showed whether the fund was in excess of or minus the actual requirements ; and when in later years the *Equitable*, for reasons peculiar to itself, commenced the system of allocating the surplus funds to its policy-holders, the amount appropriated for such a purpose became regarded as a special “good,” i.e., *Bonus* ; and when periods were defined for this purpose, in the moral certainty of a surplus, these were termed *bonus periods*. It is clear, however, that the *bonus* must, or should, owe its existence *entirely to the fact of there being a disposable surplus*. A surplus which may be safely disposed of, being ascertained, the question next arises as to *how it shall be disposed of*. For this reason we intend to treat of the entire subject of bonuses under **SURPLUS**. Thus—**SURPLUS**: *mode of ascertaining ; periods of ascertaining ; methods of distributing*. In this manner we shall cover the whole ground ; and the reader will have the advantage of having in the mean time learned the views of the best writers on several incidental questions, such as the degree of mort. to be expected ; the rate of int. to be assumed ; and the character of the investments : all of which, as we shall see, constitute important elements of consideration in the investigation for surplus.

It will be convenient, however, that we should here briefly refer to one or two points of practice in relation to **BONUSES**.

1. It has been determined beyond all question that participation in the profits of an ins. asso. does not *in itself* create any partnership liability. The cases which have led to the determination of this principle will be reviewed in detail under **PROFITS, PARTICIPATION IN**.

2. It has been decided (and the decision several times confirmed), that the payment of an add. or larger prem., with the view of participating in the surplus, does not entitle the person so paying to any larger proportion of the funds, should the office become insolvent, than a person who has not paid any such higher rate ; that is the parti. and non-parti. pol. will share *pari passu* with the general creditors in the administration of the assets.

3. That an ins. asso is not bound to carry on bus. with the view of earning profits to distribute among its participating pol.-holders. [**ARGUS LIFE**.]

4. The assignment of a pol. will carry with it, unless the contrary intention appear in the instrument by which the assignment is effected, all the bonuses, whether accrued or accruing, to the principal sum ; and the bonuses may be sued for with the principal sum. The same rule applies to legatees under a will ; they are entitled to all bonuses accrued and accruing on a pol. bequeathed to them, even though the bonuses far exceed the principal sum insured.

There is another aspect of bonuses—that is, *bonuses on shares of inst. cos.* In all joint-stock ins. cos., some proportion of any surplus, from time to time appropriated for division, is reserved for the *shareholders*. This is beyond the dividends ann. declared. A question has arisen as to whether the bonus accruing after the death of the testator upon ins. shares that have been bequeathed is to be considered in the nature of income, or an increase of the cap. This point we shall follow out under **SHARES IN INS. OFFICES**.

BOOKS, INSPECTION OF.—An impression very generally prevails that the books of a joint-stock co., ins. or otherwise, may be inspected by any share or policy holder or creditor at his pleasure. This is not so. The regis. of members of any co. regis. under the Cos. Acts, 1862–67, may be seen at any convenient time (see **REGISTER OF MEMBERS**), and all the the documents regis. at the Joint-Stock Cos. Regis. Office may be inspected for a small fee (see **REGISTRATION OFFICE FOR JOINT-STOCK COS.**). The auditors are generally the only persons beyond the regular officials of the office who have any power to inspect the books, and this power is generally given by the deed or articles of asso. When a co. passes into liquidation, then [Cos. Act, 1862, sec. 156] creditors and contributories may, under an order from the court, inspect books and documents. [**BOARD OF TRADE**.]

BOOLE, GEORGE, LL.D., pub. in 1854, *An Investigation of the Laws of Thought, on which*

are founded the *Mathematical Theories of Logic and Probabilities*. He has also pub. other works on mathematical subjects outside our range.

BOOTH, DAVID, pub. in 1818, *Tables of Simple Interest on a new Plan of Arrangement*. [INTEREST.]

BORA.—A very violent wind experienced in the upper part of the Adriatic Sea—fortunately for underwriters, of very brief duration.

BORDER COUNTIES FIRE OFFICE, THE, founded in Dumfries in 1870, with an authorized cap. of £100,000, in shares of £1. Powers to increase cap.

This Co. was founded by Mr. John Innes ; and amongst its promoters were many of the leading merchants, bankers, and manufacturers, in Dumfries, and the neighbourhood. The prosp. said :

The *Border Counties F. Office* is being formed throughout the counties of Wigtown, Kirkcudbright, Dumfries, Selkirk, Roxburgh, Berwick, Northumberland, and Cumberland, for the purpose of further facilitating and cultivating in these districts the practice of ins. against loss or damage by fire, of merchandize, buildings, farming stock, etc. It is, however, not intended to confine its operations to these counties, but to have branches and agencies in all the principal centres of business throughout Gt. Brit. and Ireland, etc. The principal offices will be in Dumfries.

That there is room for a new F. office may be assumed from the following facts :—Calculations have been made, showing that the insurable property of the U. K. at this hour remaining unprotected, amounts to over £3,000,000,000 sterling, so that only about one-third of the insurable property of Gt. Brit. and Ireland is covered by ins. . . . It may also be stated that during the past ten years the Scottish F. offices alone represent an increase of bus. of over 100 p.c.; this of itself would fully warrant the promoters in assuming that a new F. office will meet with great encouragement. The success of a new co. well and economically managed, cannot be doubted. The transactions of the *Border Counties F. office* shall be distinguished by the utmost liberality in dealing with the insured, the prompt settlement of claims, and economy, consistent with efficient management. The public, it is hoped, will appreciate the advantages of a co. holding out such inducements, and it is believed that these advantages, amongst others, applied by an efficient and highly influential Directory, will have the effect of causing the bus. of this office, within a short period, to meet the expectations of its founders.

BORE.—A word used to express a sudden rise in the tide in certain estuaries—as in the Hoogley river, between Feb. and Nov., at the new and full moon ; in the Severn near Bristol ; in some of the American rivers ; and especially in the Bay of Fundy, where, at the river Petticodiac, the tide rises 76 feet. It also occurs at Borneo, and several rivers in the East.

BORING-WORM.—The *Teredo navalis* is so called. This is the worm which enters wood in salt water, and there expands until it attains the size of a finger. It bores the wood into which it enters, during the whole of the passage between high and low watermark, completely riddling in those parts, and causing an infinite amount of damage to ships, etc. It is supposed that *creosote* is the only effective preservative against the ravages of this insect.

BORN ALIVE.—A term applied to those newly-born infants only who exhibit other acts of life than that of respiration : this is indeed, according to English law, a sign of life, but not of *live birth*—not of being wholly born alive.—*Hoblyn*.

In Gt. Britain regis. is only extended to children actually born alive ; whereas in most of the European nations it is extended to the stillborn. The leading case on what constitutes being *born alive* is *Brock v. Kellock*, where the decision was confirmed on appeal. It is in conformity with the above.

BORNIER, M., pub. in Paris, in 1729, *Conferences des Ordonnances de Louis XIV.*, etc., spoken of in our hist. of MARINE INS.

BORROWING.—Contracting a loan on security ; taking money on credit. Borrowing money on life pol. should only be resorted to in extreme cases ; and the loan should be repaid by means of the next bonus, or otherwise at an early date. A loan takes the vitality out of a life pol.

BORTHWICK, ARCHIBALD, late Consulting Act. of *City of Glasgow L.* On the founding of this Co. in 1838 Mr. Borthwick was its Man. ; but he retired from that position about 1839, to resume his former profession of an accountant—a profession which occupies a high social status in Scotland, and from which many of the most distinguished managers of Scotch ins. offices have been drawn. Mr. Borthwick, however, remained Consulting Act. of the Co., and continued to occupy that position down to the period of his death. He was also for a short period Man. or Act. of the *Mutual Accumulation L.* ; and between 1845 and 1849 Act. of the *United Deposit L.* Mr. Borthwick died about 1861.

BORTHWICK, CUNNINGHAM, now Lord Borthwick, practised as a consulting act., about the years 1839 and 1840—firm Sang and Borthwick. Afterwards he became a partner with his brother Archibald, last named. Lord Borthwick is at the present time a member of the Lond. Stock Exchange.

BORTHWICK, JAMES [uncle of the preceding], for many years Act. and Man. of the *North British*, from which positions he retired in 1857. He died in 1866, aged 85 years.

BOSTON, U.S., the capital of the State of Massachusetts.—In 1702 this city was visited with smallpox, which carried off some 300 of its then limited pop. In 1721 it had another smallpox visitation, when 884 died therefrom. In 1729 the measles caused some increase of the mort. ; and in 1730 the smallpox again appeared and carried off about 400. In 1745–6–7 an epidemic fever, brought from Cape Breton, caused a largely increased mort. In 1752 it was reported that no less than 7669 persons were seized with the

smallpox, of whom 569 died. Regarding this visitation, the following interesting facts have been preserved :

 Took it naturally : *Whites*, 5060—died, 470. *Blacks*, 485—died, 69.
 ,, by inoculation : ,, 1985—,, 24. ,, 139—,, 6.

The white and black inhabitants at that date numbered 15,684 ; of whom 5998 had been attacked by the disease previously ; 1843 moved out of the town. Out of the total of 669 deaths, 527 died during the months of April, May, and June. It commenced in January, and disappeared in September.

An Account of the Burials and Baptisms in Boston, 1701-52 :

Years.	Whites.	Blacks.	Totals.	Baptisms.	Years.	Whites.	Blacks.	Totals.	Baptisms.
1701	146	—	146	—	1727	373	106	479	—
1702	441	—	441	—	1728	385	113	498	—
1703	159	—	159	—	1729	471	99	570	—
1704	203	17	220	—	1730	740	160	900	—
1705	238	44	282	—	1731	318	90	408	563
1706	216	45	261	—	1732	400	99	499	526
1707	225	38	263	—	1733	374	84	458	526
1708	245	46	291	—	1734	440	88	528	536
1709	295	82	377	—	1735	370	85	455	579
1710	248	47	295	—	1736	532	85	617	514
1711	305	58	363	—	1737	516	91	607	519
1712	270	46	316	—	1738	476	100	576	530
1713	380	100	480	—	1739	468	86	554	499
1714	340	73	413	—	1740	568	136	704	591
1715	281	55	336	—	1741	455	100	555	680
1716	284	71	355	—	1742	445	72	517	716
1717	371	80	451	—	1743	536	84	620	585
1718	334	46	380	—	1744	425	72	497	566
1719	253	51	304	—	1745	706	74	780	573
1720	261	68	329	—	1746	479	99	578	480
1721	968	134	1102	—	1747	710	67	777	492
1722	240	33	273	—	1748	626	114	740	504
1723	242	71	413	—	1749	581	96	677	493
1724	360	47	407	—	1750	507	97	604	533
1725	268	56	324	—	1751	548	76	624	488
1726	290	53	343	—	1752	893	116	1009	357

Most of the preceding facts and figures are drawn from the *Gent.'s Mag.* for 1753.

Boston in its more modern phase has become congenial soil for the development of ins. in all its branches. The pop. of the city in 1860 was 178,000 ; it is now prob. nearer 250,000. There is perhaps no city in the world wherein a larger proportion of the citizens are ins., or for a larger amount, than Boston. In add. to some very excellent local offices, most of the leading ins. asso. of the U.S. have agencies here. The names of Russell, Lyon and Nason, Farnham Plummer, and many others, which we cannot at the moment recall, must be for ever associated with the development of ins. in this city and its surroundings. But high above all these must yet be placed that of Prof. Elizur Wright, of whose labours in the cause of ins. we shall have to speak in detail under MASSACHUSETTS.

BOTTOM OF A SHIP.—Is strictly that portion of the vessel which is under water ; but in a more general sense it signifies the ship itself ; as “insuring a ship's bottom ;” a trade in “foreign bottoms,” etc.

BOTTOMREE Co., THE.—During the South Sea mania, 1720, a Co. under this title was projected, and the shares with £1 paid sold, according to Anderson, for £3. Whether this was the Co. already spoken of as *Beele's Bottomree* (or Bottomry), we cannot discover with certainty. By notice in the *Daily Courant* of 10th March, a general meeting of the proprietors was called for the day following, in Merchant Taylors Hall, “when matters of great moment would be brought forward, which made the attendance of the proprietors very necessary.”

BOTTOMRY [formerly called *Bottomree* ; and occasionally corrupted into *Bummarce*, prob. from the Dutch *Bomerie*].—A species of mortgage or hypothecation of a ship, by which her keel or bottom is pledged *partem pro toto* (in whole and in part) as the security for the repayment of a sum of money borrowed. Thus, the owner or captain of a ship may, under certain circumstances to be hereafter explained, borrow money, either to fit her out so as to proceed on her voyage, or to purchase a cargo for the voyage, or to provide for repairs, refit, and other contingencies on the voyage. The leading condition upon which the loan is obtained is, that if the ship be lost on her voyage, the lender loses his money ; but if she arrive in safety at the destination fixed at the time of obtaining the advance, then the money borrowed is to be repaid, together with the interest or prem. agreed upon at the time of borrowing, at whatever rate that may be ; and quite irrespective of any restriction as to the rate of int. on ordinary loan transactions.

But there is another special incident in relation to loans on Bottomry, and it is this—that where several loans have been obtained on the same ship, they are to be repaid in the inverse order to which they were obtained, viz. the last loan first, and the others in like order.

Much attention has been drawn to loans of this class, and mainly for the following reasons. 1. They are very ancient—apparently coeval with the earliest development of maritime commerce. 2. They were apparently devised with the view of defeating the varying restrictions to *Usury*; or, if not especially so devised, were very soon specially adapted to that end. 3. They being in themselves a species of marine ins. *are supposed to have led directly up to the present system of marine ins.* In every aspect the subject is one which we deem worthy of the careful consideration of the student, and even of the general reader.

There are several modifications of the contract of Bottomry which must be here explained, in order to guard against confusion. Thus, where the loan is not upon the ship, but upon the *goods* and *merchandise* only, these being necessarily liable to be sold or exchanged, in the course of the voyage, it becomes almost a necessary condition of such a loan that the borrower becomes *personally* bound to answer the contract. This is called taking up money at *Respondentia*. A leading distinction, apart from this element of personal risk of the borrower, arises: for whereas in a loan on *Bottomry* the lender runs no risk, even though the goods and merchandise be lost; so, in a loan on *Respondentia*, the lender must be paid his principal and int., even though the ship perish—providing the goods and merchandise are made safe. In most other respects the contracts are analogous.

There is another and a distinct form of contract, in which the money borrowed is neither secured upon the ship nor its cargo, but stands at the mere *hazard of the voyage itself*. As when a man lends a merchant £1000 to be employed in a beneficial trade, upon the condition to be repaid with extraordinary int. in case a given voyage be safely performed. This was termed by the Romans *Fœnus Nauticum*. It is sometimes termed *Usura Maritima*, or *Pecunia ræjectina*. Each of these forms of contract will be spoken of and defined under its proper alphabetical head. They are a great deal too indiscriminately spoken of by many of the writers whom we shall have occasion to quote.

It will be seen that each of these forms of contract embodies the one principle which could alone lift them out of the range of the prohibitions against usury, viz., that the repayment of the principal advanced, as well as the recompence for its use, is made to depend upon the successful accomplishment of the voyage. The elements of *maritime risk* being thus incorporated into the contract, it became impossible to estimate (in the eye of the law) how much of the consideration to be paid for the loan was for int., and how much for the risk of voyage; yet if 12 p.c. came to be regarded as the proper rate for the loan of money on a ship in harbour (as we shall see hereafter was the case in *Rome*), all that was paid beyond that rate when the ship went out to sea might well be considered in the light of a *premium* for insuring the safety of the voyage.

Regarding the origin of Bottomry contracts, we can only supplement what we have already said by the dictum of Sir William Jones, and the Hon. Mountstuart Elphinstone, who expressly mention the loan on bottomry as practised by the nations of *India* in remote ages. Among those portions of the *Institutes of Menu* which are still extant is that which treats on *sea laws*, and which warrants, in the opinion of Mr. F. Hendriks, the comment of the writers just named. A question indeed turns upon the antiquity of these *Institutes*. Some writers have contended that they date back for a period of 6000 years. We have had to assert in another part of this work [USURY] that they may not be entitled to nearly such a remote antiquity. We learn from the *Vyavahara Mayuka: a Treatise on the Hindoo Law*, by Nilakamtha Bhatta, which discusses the rates of int. lawful to be taken, that it had been ordained by Yajnavalkya that “all borrowers who travel through vast forests may pay *ten*, and such as travel the ocean *twenty*, in the hundred.” These last words seem to imply loans to merchants who, as was the custom in early periods, sailed with their merchandise to trade in ports more or less distant. The first seems to relate to *transport ins.*; the latter to advances on bottomry. The passage is at least sufficiently obscure to justify such a surmise. We gladly pass from the regions of doubt to those of authentic record.

The *Greeks*, who flourished several centuries before the Christian era, not only understood but practised Bottomry to a very considerable extent. The money was lent either upon the ship's cargo or freightage, or on the ship itself, for a specified time—commonly that of the voyage. Int. at the rate of a tenth, i.e. 10 p.c. was the minimum rate; and the other rates mentioned are 12½, 16½, 20, and 33½. In the age of Lysias [B.C. 440] and Isæus [B.C. 400], 18 p.c. appears to have been the common rate. The voyages were mostly short.

Bottomry was considered a matter of so much importance in *Athens*, that fraud or breach of contract in transactions connected with it was sometimes punishable with death. The loans were generally made upon the cargo shipped, sometimes on the vessel itself, and sometimes on the money to be received or due for passengers and freightage. The int. as well as the principal was dependent on the due performance of the voyage. The lenders took every precaution against negligence or deception on the part of the borrowers; the latter also were careful to have witnesses present when the cargo was put

on board, for the purpose of depositing, if necessary, to a *bond fide* shipping of the required amount of goods. The loan itself was either for the voyage out, or for the voyage out and home. In the former case the principal and int. were paid at the place of destination, either to the creditor himself if he sailed in the ship, or to an authorized agent. In the case of the voyage out and home, the payment was made on the return of the ship; and it was specially provided in the agreement between the contracting parties that she should sail to certain specified places only. A deviation from the terms of the agreement in this and other respects was, according to a clause usually inserted in the agreement, punishable by a fine of twice the amount of the money lent. Moreover, if the goods which formed the orig. security were sold, fresh articles, of the same value, were to be shipped in their place.

The rate of int. would of course vary with the risks and duration of the voyage. Xenophon speaks of the 5th and 3rd parts of the cap. lent as being commonly given in Bottomry—referring here to voyages out and home. The int. of an 8th, *i.e.* 12½, mentioned by Demosthenes, was for money lent on a Trireme [a war vessel propelled by oars] during a passage from Sestos to Athens; but upon condition that she should first go to Hierum, to convoy vessels laden with corn. The principal and int. were to be paid at Athens on her arrival there.

But not only have we this general knowledge of the contract of Bottomry among the Greeks, but we have the very substance of the contract itself. In the speech of Demosthenes against Lacritus [prob. about 340 B.C.], we find the following contract recited, and we place alongside of it a modern Bottomry bill, for the purpose of comparison.

Androcles of Sphettoe, and Nausicrates of Carystus, have lent to Artemon [of whom Lacritus was brother and heir], and to Apollodorus of Phaselis, three thousand drachmæ of silver upon a cargo to be conveyed from Athens to Mende or to Scione, thence to the Bosphorus, and, if they please, along the left coast, as far as the Borysthenes, to return to Athens.

The borrowers shall pay interest at the rate of 225 per 1000 [22½ p.c.]; but if they do not pass from the Black Sea to the Temple [of the Argonauts—the Thracian Bosphorus] until after the setting of Arcturus [*i.e.* before the 20th Sept. or thereabouts, when the navigation began to be dangerous], they shall pay 300 interest per 1000 [30 p.c.]. They pledge for the sum lent, three thousand jars of Mendeian wine, which they shall convey from Mende, or from Scione, on board a ship of twenty oars, of which Hyblesius is captain. They neither owe nor shall borrow anything from anybody upon the wine appropriated to this loan.

They shall bring back to Athens, on board the same ship, the goods which they shall have bought with the price of this wine; and when they arrive there, they shall pay to the lenders, by virtue of the present deed, stipulated sum within twenty days, reckoning from the day on which they enter the Port of Athens, without other deduction than the losses or jettisons agreed to by the general consent of the passengers, or those which they may have experienced from (the attacks of) enemies. With such single exception, they shall pay the whole, and shall deliver to the creditors, free of any charge, the goods appropriated, until such time as they shall have paid in full the interest and the principal stipulated by the present deed.

If this sum be not paid within the defined term, the creditors may cause these goods to be sold; and if their proceeds therefrom do not amount to the sum

To all men to whom these presents shall come. I, *A. B.* of Bengal, mariner, part-owner, and master of ship called the *Exeter*, of the burthen of 500 tons and upwards, now riding at anchor in Table Bay, at the Cape of Good Hope, send greeting: Whereas I, the said *A. B.*, part-owner and master of the aforesaid ship called the *Exeter*, now in prosecution of a voyage from Bengal to the port of Lond., having put into Table Bay for the purpose of procuring provision and other supplies necessary for the continuation and performance of the voyage aforesaid, am at this time necessitated to take up, upon the adventure of the said ship called the *Exeter*, the sum of £1000 sterling moneys of Gt. Brit., for setting the said ship to sea, and furnishing her with provisions and necessaries for the said voyage, which sum *C. D.*, of the Cape of Good Hope, master-attendant, hath at my request lent unto me and supplied me with, at the rate of £1220 sterling, for the said £1000, being at the rate of £122 for every £100 advanced as aforesaid, during the voyage of the said ship from Table Bay to Lond.: Now know ye that I, the said *A. B.*, by these presents, do, for me, my executors, and administrators, covenant and grant to and with the said *C. D.*, that the said ship shall, with the first convoy which shall offer for England after the date of these presents, sail and depart for the port of Lond., there to finish the voyage aforesaid. And I, the said *A. B.*, in consideration of the sum of £1000 sterling, to me in hand paid by the said *C. D.*, at and before the sealing and delivering of these presents, do hereby bind myself, my heirs, executors, and administrators, my goods and chattels, and particularly the said ship, the tackle and apparel of the same, and also the freight of the said ship, which is or shall become due to the aforesaid voyage from Bengal to the port of Lond., to pay unto the said *C. D.*, his executors, administrators, or assigns, the sum of £1220 of lawful Brit.

which is promised to them by the present deed, they may demand the difference from Artemon, and from Apollodorus, either from one of the two, or from both together; and may seize their property on land or on sea, in whatever place it may be, as if they had been condemned, and that the execution of a sentence of the tribunals were in question.

If the borrowers do not load on return into the Black Sea; or if remaining in the Hellespont ten days after the [early rising of the] Dog-Star [end of July], they discharge their merchandize in a country where the Athenians cannot carry out the sale of the pledges which have been given them [in some place where the Athenians had no right of reprisals], when they return to Athens, they must pay interest upon their debt, at the rate of the preceding year [22½ p.c.]. If any considerable accident occur to the ship whereon the merchandize is loaded, the right of the creditors shall be limited to the goods which have escaped it [to the cargo which had been saved]. With all these stipulations, nothing can invalidate the present deed.

[This bond, or policy, as it is sometimes called, was first translated into French by Pardessus, and thence into English by Mr. Hendriks. We have taken the liberty of interpolating a few explanatory notes where the expression is obscure, or where the force of the orig. had been lost.]

In witness whereof the parties have interchangeably set their hands and seals to four bonds of this tenor and date, one of which being paid, the others to be null and void.

At the Cape of Good Hope, this . . . day of . . . , in the year of our Lord . . .
A. B. (L.S.) Witness, . . .

We shall have occasion to offer some comments on the similarity of these contracts hereafter. And we may here remark that strictly speaking the Greek instrument is a *Respondentia* Bond, and not a Bill of Bottomry.

M. Pardessus, in his great work on *Maritime Commerce and Ins.*, after a most painstaking investigation of the subject, says:

Numerous contemporary authors show the existence of Bottomry loans amongst the Greeks. These were arranged sometimes according to time, but generally according to the nature of the navigation. Vessel, apparel, cargo, freight, were among the security given. The essential condition was that the borrower should only be compelled to repay the cap. and int. if the objects affected arrived in port. The lender sometimes took the precaution to cause *other* goods of the borrower to be mortgaged to him, to ins. prompt payment on the expiration of the risk.

Among the Greeks these loans were not only effected when the vessel found it necessary by stress of circumstances during a voyage; but also before she has left the home port, in order to obtain funds to pay for cargo to lade her with; and in foreign ports, in order to enable her to buy a return cargo, etc. The lender usually stipulated that the value of the article lent on should be twice the amount lent; and the borrower was to declare if he had already obtained an advance on the same goods. The transaction was authenticated by a deed, which was torn up on the completion of the contract on both sides.

The lading was proved by the official regis., or by witnesses, in the presence of whom the borrower declared what objects were placed at the risk of the creditor, without whose consent he was not entitled to borrow further on the same articles, unless he augmented their quantity in proportion to the new loan; or unless the goods mortgaged were sufficient to secure both lenders. There were heavy penalties on the borrower, in case of breach of faith as to destination, amount of goods, etc. There was a law against carrying corn elsewhere than to Athens; and loans were forbidden, under pain of confiscation, on corn carried in opposition to this law. When in case of composition with pirates, or jettison, or otherwise, by *force majeure*, the goods were diminished, or paid a contribution, the lender supported the loss to the discharge of the borrower. In case of total loss the borrower was discharged and the lender could not prove against any other property of the borrower deposited for security of payment, unless the lading had been evaded. It followed that no punishment was too severe for the borrower, who, having had the bad faith to misapply the goods mortgaged, caused the ship to be lost in order to avoid paying the sum borrowed.

In the *Rhodian* Law we find direct reference to Bottomry loans. Thus in one section it is said, "That when masters of ships, who are proprietors of one-third of the lading, take up money for the voyage, whether for the outward, or homeward bound, or both; all transactions shall pass according to the writings drawn up between the master and

money, within 30 days next after the safe arrival of the said ship at the port of Lond. from the said intended voyage.

And I, the said A. B., do for me, my executors and administrators, covenant and grant to and with the said C. D., his executors and administrators, by these presents, that I, the said A. B., at the time of sealing and delivering of these presents, am a true and lawful part-owner and master of the said ship, and have power and authority to charge and engage the said ship with her freight as aforesaid; and that the said ship with her freight shall, at all times after the said voyage, be liable and chargeable for the payment of the said £1220, according to the true intent and meaning of these presents.

And lastly, it is hereby declared and agreed by and between the said parties to these presents, that in case the said ship shall be lost, miscarry, or be cast away before her arrival at the said port of Lond. from the said intended voyage, that then the payment of the said £1220 shall not be demanded or be recoverable by the said C. D., his executors, administrators, or assigns, but shall cease and determine, and the loss thereby be wholly borne and sustained by the said C. D., his executors and administrators, and that then and from henceforth every act, matter, and thing herein mentioned on the part and behalf of the said A. B., shall be void, and anything herein contained to the contrary notwithstanding.

lender; and the latter shall put a man on board to take care of his loan." Then again, "If masters or merchants borrow money for their voyages, the goods, freight, ship, and money being free, they shall not make use of suretyship, except there be some apparent danger of the sea, or of pirates. And for the money so lent the borrowers shall pay *naval interest*." Boeckh says the exaction of an exorbitant rate of int. for loans on Bottomry among the Rhodians was declared illegal—"unless the principal was really exposed to the dangers of the sea."

Loans on Bottomry were well understood by the *Romans*: as it was likely they would be, seeing how largely they had drawn upon the maritime customs and the jurisprudence of the Greeks. When, about A.D. 533, Justinian reduced the rate of interest on ordinary securities to a maximum of 6 p.c., a special exemption was made in favour of *Fenus Nauticum*, or Bottomry; and upon this ground: that the risk of the money was entirely the lender's. Therefore, while a vessel was at sea, the lender might demand any rate of int. he pleased for a loan; but after she reached harbour, and while she remained there, no more than 12 p.c. could be demanded—which indeed was regarded as the usual rate in such cases. Some writers assert that Justinian made 12 p.c. the rate for *Fenus Nauticum* under all circumstances; but the best authorities do not bear out this view. Gibbon, indeed, in his *Decline and Fall of the Roman Empire*, speaking of the rates of int. which prevailed in or about the year A.D. 533, says: "Twelve was granted to *Nautical Insurance*, which the wiser ancients had not attempted to define; but except in this *perilous adventure*, the practice of *exorbitant usury* was severely restrained." But the expression "exorbitant usury" can scarcely apply to such a risk. Therefore his testimony rather strengthens the position we have taken. It is important to observe that Gibbon uses the term "Nautical Ins." This may be taken as an indication of the nature of the risk which had become impressed on his mind during the investigation of the subject.

In the *Koran* of Mohammed, which is believed to date about A.D. 652, we find in Book II., entitled "The Cow," a passage which may fairly be held to have reference to B., although the translation (Sale's) is not very distinctly expressed:

O true believers, when ye bind yourselves one to the other in a debt for a certain time, write it down; and let a writer write between you according to justice. . . . And if ye be on a journey, and find no writer, let pledges be taken; but if one of you trust the other, let him who is trusted return what he is trusted with, and fear God his Lord.

It will be seen that the method here indicated resembles the course of action in relation to B. loans obtained both on land and at sea.

In the *Basilica*, a digest of laws compiled A.D. 867-880, by the Byzantine Emperor Basilus, the provisions regarding loans on Bottomry appear to follow in all respects those of the Roman Digest.

In the Greek compilation, *Jus Navale Rhodorum*, the date of which is fixed prior to A.D. 1167, the regulations regarding loans on Bottomry and Respondentia appear also to follow entirely those of the *Roman Digest*, which had itself been founded on the practices of the Greeks themselves some 1500 years earlier.

It is generally admitted that the CONSOLATO DEL MARE—compiled between the years 1226 and 1270—although full in its account of other maritime customs and usages, is silent on those incident to the practice of Bottomry: although several chapters indicate and presuppose its use. Chap. 106 of the *Consolato* requires the merchants on board a ship to lend to the master what he may require for the necessities of the ship.

The *Roles D'Oleron*, the date of which we place at 1266, do not contain anything very explicit on loans on maritime risk, or Bottomry, or Respondentia. It appears by Rule No. 1, that if the captain, being in a foreign country, finds himself in want of money, he must first write home to his owners before he sells the ship, "but if he have nede of money for the expences of the shyp, he may lay to guage some of the takelyng, be [by] the councel of the maryners of the shyp." Rule 23 gives the master permission to sell part of the cargo to supply his store, but is silent on the subject of raising a loan. We quote from the *Admiralty Black Book*. The maritime regulations of the *Hanse Towns* were founded on those of *Oleron*, and they are to the effect following: "A master, being in a *strange country*, if necessity drive him to it, may take up money on Bottomry, if he cannot get it without, and the owners shall bear the charge."—Art. 60.

Some writers have been of opinion that the *Laws of Wisby*, which we attribute to the 14th century, are silent upon Bottomry contracts. A reference to the 45th art. will show that the nature as well as the name of Bottomry was fully understood.

We now arrive at another aspect of the case. By the close of the 14th century—prob. earlier—the modern system of marine ins.—that is, the guarantee of a fixed sum in case of loss (or corresponding contribution in case of damage) for a fixed prem. paid, or agreed to be paid, by the owner to the insurer: which prem. the insurer is to receive quite irrespective of the fate of the ship or the success of the voyage—had been introduced. Now if the owner of the ship were at liberty to ins. it for its *full value*, after having borrowed upon it at Bottomry, it is clear that in the event of the loss of the ship he would be a gainer of the sum he had borrowed, less only such portion of the sum so borrowed as he had expended in the preparations for the voyage. It will be seen that most of the early ins. ordin. guard against such an abuse.

The first of the many Ins. Ordinances of Europe of which we have any exact knowledge is that of *Barcelona*, promulgated 1435. It provides as follows: "If any one has borrowed on Bottomry, these loans must be taken into account in the estimation [of the interest of the owner in the ship], and deducted from the assu., in whole or in part, up to three-fourths of the value of the vessel, or parts thereof according to estimation." Thus the limit of ins. allowed was *three-fourths* of the value of the ship, *from which again must be deducted all loans obtained on Bottomry*.

In the Ins. Ordin. of *Florence*, A.D. 1523, we do not find any mention made of the contract of Bottomry, or any regulations for the government of such contracts.

By the Ins. Ordin. of *Spain*, made at Valladolid, by King Philip II., in 1566, there occur the following provisions regarding Bottomry:

V. . . . And if any master or owner of a ship takes up money at int., or gives bond for a debt that he owes, the creditor runs the risk on the said body and appurtenances of the ship, and the master or owner *ins. so much the less of the hull's value*.

VI. If the owner or master of a ship will sail to any part of the Indies or Isles, either with, or without the *Flota*, he may not take up any sum at int., and consign the payment in the Indies, on the ship, freight, and necessities, without a previous licence from the Prior and Consuls of *Sevil*, who shall make examination about the ship, tonnage, and value, and consider what may in reason be taken at int. on the ship, so that it does not exceed *one-third* part of her worth: And the *Consulado* [Consular Court] shall keep a book of these licences; and the concerned not observing the form of this law shall incur the loss of their goods.

In the Ins. Ordin. of *Antwerp*, 1563, there is the following:

Likewise nobody shall take or ask any money upon the bottom of a ship (commonly called *Bottomrée*, or *exchange* upon the hull or keel of the ship), for himself or in behalf of another, directly, or indirectly, unless the master of any vessel should, by any misfortune of the sea, enemies, or other unavoidable accident (whereof he shall be obliged to produce proper certificates), stand in want in a foreign country, where he could not dispose of any goods in a regular way; in which case he may take up on the bottom of his ship, by way of *Bottomrée* or otherwise, *the quarter part of the value of such bottom, and no more*, unless necessity oblige him to take a larger sum than the aforesaid quarter part of the value, in which case he may take such further sum on *Bottomrée* as aforesaid, provided he makes the necessity thereof appear as above mentioned. Neither shall he expose to sale or alienate any goods on board of such vessel, as long as he can find bills of exchange or *Bottomry* upon the bottom of such vessel; and even not finding that, he may not sell more of such merchandize than a quarter part of the value of the said vessel, unless upon the greatest emergency as aforesaid; and then he shall be obliged to pay to the merchant, to whom such goods did belong, the price which they would have fetched at the place for which they were designed and shipped; the said merchandize in that case paying him his full freight; as well for the goods so sold by the way as aforesaid, as for those unsold; on penalty, if the master should act to the contrary, that he shall make good to his owners, fellow-owners, and merchants, the damage they shall sustain, and be arbitrarily punished besides.

At a meeting of the Deputies of the *Hanse Towns*, held at Lubeck in 1591, some *sea laws* were made, and art. 56 provides, "That if any person concerned in fitting out a ship shall refuse his consent to a voyage agreed on by a majority of her owners, and deny paying for his share of her out-set, the master shall have power to borrow money on such share, and pay the principal and premium out of it."

Now here we see the word "premium" in familiar use—the word which has descended to us. Nor has the sense in which it was, and is, used very much changed. The prem. on a Bottomry loan is the consideration for a sum advanced *before the loss* of the ship. The prem. on a marine pol. is for a sum to be paid *after the loss*. That is the only point of difference. A ship of the value of £2000 may be covered in this manner—£1000 on a bottomry loan; £1000 by marine ins. If she be lost these two sums indemnify the owner. The bottomry prem. is higher for several reasons: 1. It has to include int. for the money advanced. 2. It will *never be paid at all if the ship be lost*. 3. The security may be destroyed by a subsequent loan of the same character. The prem. of marine ins. is lower because the incidents of hazard it covers are less and fewer. In some of the Continental countries—as for instance France—the ordinary prem. of marine ins. is not paid until the termination of the voyage; thus rendering the similarity greater.

The Ins. Ordin. of the City of *Middelburg*, in Zealand, A.D. 1600, is entirely silent on the subject of Bottomry.

In Civil Statutes of the Republic of *Genoa*, promulgated 1610, which contain matters of great interest in relation to ins. generally, we do not find any regulations regarding Bottomry.

Straccha, an Italian, who wrote learnedly upon int. during the 17th century, urged that all loans upon Bottomry were based upon an illicit and usurious bargain. A few other Continental writers have supported him; but the large majority are of the contrary opinion.

The first English writer who speaks of B. ["Bottommarie," he calls it] is Gerard Malynes, in his *Lex Mercatoria*, 1622:

The money so taken up by the master of the ship is commonly done on very great necessitie, when moneyes must be had in forreine countries to perform a voyage; for the use paid for the same is very great, at 30, 40, and 50 *pro cent.*, without consideration of time, but within so many daies after the voiage ended. This money is called *Pecunia trajectitia*, because that upon the lender's danger or adventure it is carried beyond or over the seas, so that if the ship perish, or that all be spoiled, the lender do lose the mony. But on the contrary, mony letten at interest is delivered on the perill of the borrower; so that the profit of this is merely the price of the simple loan, called *Usura*; but the profit of the other is a reward for the danger and adventure of the sea, which the lender taketh upon him during the loane, which is to bee understood untill the voyage ended: therefor if the money miscarry either before the voyage begin or after the terme appointed for the full loan, then the price pertaineth

to the borrower thereof, and not to the lender: I meane of perills proceeding by storm, violence, spoil, or such like occasions, which cannot be eschewed by any diligence of the borrower. Therefore if the borrower imploy that money upon commodities, and that the said commodities become forfeited for non-payment of custome, the lender shall be clere of any damage thereby. It is also to be noted that money lent at maritime interest without hasard, but upon securitie, shall pay no profit otherwise than the money lent at interest, because the securitie is given over and above for the lender's assurance, Again: suppose it were money not entered in the purser's book, and yet lent for the need of the company within the ship during the voyage, if before the day appointed for the paiement, shipwrecke or spoile happen, then should the losse come in contribution betwixt them; because if that money had been lying by the lender, still unlente, it had been in common danger with the rest. But if the time appointed were past, with the perils aforesaid, then shall the borrower pay thatt mony so borrowed free from all contribution. Further, in case the borrower detaines any such money lent as aforesaid, beyond the time appointed for the repaying, hee shall at his returne not onely pay the profit agreed upon before the voyage, but also augment the same according to the longer time, and shall pay the profit of that first condition accordingly.

In the *Guidon de la Mer*, supposed to date about 1647, it is suggested that the modern contract of Bottomry is not at all that which was known to the ancients. *Emerigon* seemed to think this might be true as to the *form* which modern regulations had imparted to the contract; but have we not already shown that both in form and substance the modern contract resembles that in use with the Greeks long before the Christian era?

Cleirac, in his great work, the *Usages and Customs of the Sea*, pub. 1647, says:—"When there is no news of a ship within any certain time, a *borrower* on Bottomry hath no abandonment to make in order to be quit of his engagement; nor can the *lender* molest him until he can prove the ship to be arrived."

Loccinius, a *Danish* writer, who pub. a work on Maritime Customs in 1652, speaking of Bottomry, says:—"And the money so taken up by the master is done upon great extremity, and that for the completing the voyage, when they are in distress and want in some foreign parts; and indeed such taking up is in the nature of mortgaging the ship, for "*le Neif oblige al payment de ceo*," etc. And in the instrument there is a clause that expresses that the ship is engaged for the performance of the same." The prevailing idea of the contract of Bottomry at this period was that it must only be resorted to in cases of extremity; and this is the proper view.

Roccus, in his famous work, pub. 1655, says:—"In Italy it is permitted to those who advance money on Bottomry to ins. the *profit* as well as the principal."

In a pamphlet by Francis Cradocke, merchant, entitled, *An Expedient for taking away all Impositions; and for Raising a Revenue without Taxes*, presented to Charles II. in 1660, among the numerous advantages which were to accrue to the King on the estab. of a bank on the principles set forth by the author, is one which bears on our subject:—"It will bring into His Majesties Revenue all the int. money paid in England, and money paid on *Bottomries* to Scriveners and others, which at 6 p.c. amounts unto by computation yearly *two millions*; and when to be had at 4 p.c. will be £1,330,000 p.a."

In the case of *Joy v. Kent*, which arose in 1665, the facts were as follow: A bond was given by Kent, the defendant, that if a ship named therein returned from Ostend to Lond. within 6 months thereafter, a certain sum of money, which included the principal and int.—the latter being about one-third more than the legal int. of the money—should be paid to Joy. If the ship did not return, the obligation to be void. The defendant on being sued pleaded that there was a corrupt agreement between himself and the plaintiff; and that at the time of making the obligation it was agreed between them that, in the event of the return of the ship, the plaintiff should have no more than legal int. He averred in fact that the obligation was entered into by *Covin*, to evade the Stat. of *Usury*, and the penalty thereof. Chief Baron Hale delivered judgment: Clearly this bond is not within the Stat.; *for this is the common way of ins., and if this were void by the Stat. of Usury, trade would be destroyed*. And it is not like to the case where the condition of a bond is to give so much money, if such or such a person be then alive; for there is a certainty of that at the time. But it is uncertain and a casualty whether such a ship shall ever return or not.

In 1676 Charles Molloy pub. his *De Jure Maritimo et Navali*, etc., wherein he has a chap. "Of monies advanced by way of Bottomry, or *Fœnus Nauticum*," in which he says:

The distinction is great between moneys lent to be used in commerce at land, and that which is advanced to sea. In the first, the laws of the realm have set marks to govern the same, whereby the avaritious mind is limited to a reasonable profit. The reason of that is, because the lender runs none, but the borrower all the hazard, whatever that money brings forth. But money lent to sea, or that which is called *Pecunia trafactitia*, there the same is advanced on the hazard of the lender, to carry (as is supposed) over sea; so that if the ship perishes, or a spoilation of all happens, the lender shares in the loss, without any hopes of ever receiving his monies; and therefore is sometimes called *Usura Marina*, as well as *Fœnus Nauticum*—the advantage accruing to the owners from their money, arising not from the loan, but from the hazard which the lender runs; the which is commonly reduced to a time certain, or one or more voyages, according to their several and respective agreements.

If the bonds be sealed, and the money is advanced, if the ship happens to miscarry by storm, fire, enemy, or any otherwise, before the voyage begun, then the *borrower* runs the risque, unless it be otherwise provided generally; as that if such a ship shall not arrive at such a place at such a time, etc.; there the contract hath its inception from the sealing; but if the condition be, That if such a ship shall sail from *Lond.* to *Amsterdam*, and shall not arrive there, etc., then, etc., there the contingency begins not till the departure. Yet it has been conceived, That if the master takes up money accordingly, and buys in a lawful lading, but will happen to endeavour to defraud the Prince or State of their customs, and puts such goods on board, by means whereof he has incurred a forfeiture of his ship; in such case the lender is not obliged to such hazard. . . .

Monies that are advanced are of two securities, the one is on the bare ship, and the other is upon the person of the borrower; sometimes upon both. The first is where a man takes up monies and obliges himself, that if such a ship shall arrive at such a port, then to repay (perhaps) double the sum lent; but if the ship happens to miscarry, then nothing.

So likewise some will take up monies, the condition reciting, *Whereas there is such a ship*, naming her, *bound to Amsterdam, whereof such a man is master* (whereas indeed there is no such ship or master in nature), *that if that ship shall not arrive at such a place within 12 months, the money agreed on to be paid shall be paid; but if the ship shall arrive, then nothing.*

He then reviews these different classes of loans, and offers some instructive obs. thereon, as follows :

The first of these is honorable and just, according to the laudable practice among marine persons, and though the advantage runs high, as 20, 30, nay sometimes 40 p.c. without consideration of time—for the monies are to be paid within so many days after the ship's arrival;—yet in regard the adventure is born by the lender, for (if the ship perishes the advancer loses) the laws and practices of all maritime countries allow of the same. And therefore by the Common Law, if an action of debt be brought on such an instrument, the defendant cannot plead the Stat. of *Usury*.

The other advance, which is upon a fictitious supposition of a ship and master, wherein indeed there is no such in nature, is more unconscionable, *the same being the common practice that's used amongst the Italians, and now on this side of the water*; though the same is as to internal right unjust, yet it is daily practised, and it was not long since adjudged that such contract was good, according to the common law of this realm, and that on a special verdict. Most certain it is, that the greater the danger is, if there be a real adventure, the greater may the profit be of the monies advanced; and so hath the same been the opinion of civilians, and likewise some divines; though some seem to be of opinion that any profit or advantage ought not to be made of monies so lent. . . .

There is likewise a second way of advancing of monies called *Usura Marina*, joining the advanced monies and the danger of the sea together; and this is obliging sometimes upon the borrower's ship, goods, and person. The product of which by agreement will advance sometimes 20, 30, and sometimes 40 p.c.; as for instance, a private gentleman has £1000 ready money lying by him, and he has notice of an ingenious merchant that has good credit beyond seas, and understands his business fully; applies himself to him, and offers him £1000 to be laid out in such commodities as the merchant shall think convenient for that port or country the borrower designs for, and that he will bear the adventure of that money during all that voyage (which he knows may be accomplished within a year); hereupon the contract is agreed upon, 6 p.c. is accounted for the int. and 12 p.c. for the adventure outwards, and 12 p.c. for the goods homewards; so that upon the return the lender receives 30 p.c., which amounts (with the £1000 advanced) to £1300. The lender in this case hath a good bargain, no question. Now let us see what advantage the borrower hath.

1. The borrower prevents the taking up the like sum at int., which comes to 6 p.c. and brokerage, which comes now in this age, through the generosity of the merchant, and covetousness of the scrivener, at 1 or 2 p.c. more; and then the same is let out but for 6 months; and then the scrivener inevitably at the six months end sends his note, that his friend expects his monies to be paid in; so that to stop that gap there must be *continuation*, which is at least 1 p.c. more, besides the obliging of friends in securities. 2. *The assu. is prevented*, which, perhaps, may come to between 5 and 20 p.c., according as the times are; and common prudence will never suffer a merchant to venture 2 parts of 3 parts of his estate in one bottom without assuring. 3. As he shall not have occasion to ensure, so it may be a great occasion of preventing the common obligation of his ensuring of others; the which in a generous merchant in honour cannot be desired, the *prems.* running reasonable. 4. It prevents the parties running the risque and danger of the seas, enemies, or any other fatal loss, and hath been a means to introduce a man's credit in a short time at lesser charge, if not to put him in a condition not to be beholden to such a fair though chargeable means. And this cannot be *usury* by the laws of this realm, for the risque and danger that the lender runs.

Many of the passages in the preceding are by no means clear, and indeed hardly intelligible; yet we could not pass over the remarks of a writer who was regarded of very great authority at this period, and whose works passed through repeated editions.

One of the first questions which must have arisen was whether those who advanced on Bottomry were bound to contribute *average* as to any of the cargo jettisoned with a view to saving the ship. The *Greeks*, as we have seen, had provided for this. The first among the moderns who adopted this course were the French.

The famous Marine Ordin. of *France*, 1681, contains very full provisions regarding Bottomry; and as they have been the subject of much comment, and of general laudation, it seems important not to curtail them :

I. Contracts on B. may be made before a notary, or by private contract.

II. Money on B. may be given on the hull and keel of the ship, tackle, and apparel, fitting out, victualling, jointly or separately, on the whole or on part of her cargo, for the whole voyage, or for a limited time.

III. We declare unlawful the taking money upon B. on the hull, keel, or cargo of a ship beyond the value; under penalty of paying, even in the case of the loss or capture of the vessel, the whole of the sum borrowed.

IV. We prohibit under like penalty the taking money upon B. on the freight the ship is to make, and on the expected profit on goods, even upon the wages or hire of seamen, except in the presence and with the consent of the master, and then it must be for less than half of the wages.

V. We expressly prohibit all persons giving money on B. to seamen, on their wages, or on the voyage, except with the consent and in the presence of the master, under the penalty of the confiscation of the loan and of 50 livres.

VI. The masters shall themselves be answerable for the whole of the sums taken with their consent by the seamen, if those sums exceed the half of their wages, and this notwithstanding the loss or capture of the ship.

VII. The vessel, her tackle, apparel, fitting out, and victualling, even the freight shall be particularly liable to, and answerable for both principal and int. of money on B. given on the hull and keel of the ship, for the prosecuting and furthering of the voyage. The cargo shall on its part be answerable for money borrowed for its benefit.

VIII. Those who shall lend money on B. to a master at a place where his owness reside, without their consent, shall not be privileged, or advantaged for the same, for more than the share of the master of the vessel and freight, though the contracts were made for refitting and victualling the ship.

IX. However the shares or parts belonging to the owners who shall have refused to contribute

towards the repair of the vessel shall be answerable for their quotas of the money taken up by the master for refitting and victualling.

X. These moneys continued on as a loan, or renewed on B. on any voyage, shall not enter into competition with what shall have been lost, lest for the immediate service of the voyage.

XI. All B. contracts become void through the entire loss of those effects on which the loan has been made, *provided it happen by accident, and in those places, and within the time, stipulated by those contracts.*

XII. That which may proceed from the perishable quality of anything, or through the act or deed of the owner, master, or shipper, shall not be reputed *accident*, except otherwise stipulated by the contract.

XIII. If the time the risk is to continue be not stipulated by the contract, with regard to the vessel, tackle, apparel, and victualling, it shall begin and run from the day she shall have sailed, till she be at anchor in her intended port, and there moored to the key. And as to the goods, the risk runs from the time of their being shipped, or in lighters to carry them on board, until they are landed.

XIV. Any one shipping of goods and taking up money at B. on them, though the ship and goods be lost, shall not be freed from his contract, except he prove that he had effects to the amount of the sum he borrowed.

XV. If, however, the borrower can prove that he could not ship for the value of the sums taken on B., the contract in case of loss shall be reduced in proportion to the value of the effects laden, and shall only hold good for the overplus; for which the borrower shall pay int. according to the course of the place where the contract was made, until the whole principal be paid: *on the other hand, if the ship arrive safe, the current int., and not maritime prem., shall be due on what was borrowed more than what was actually shipped.*

XVI. Lenders on B., and not the borrower, shall contribute to *gross average*, such as ransoms, contributions, jettisons, the cutting away masts and rigging for the common safety of the ship and goods; but not to *simple averages*, or particular damage, which may happen, except it be particularly stipulated.

XVII. Contracts on B. shall nevertheless be answerable for the value of goods saved from shipwreck.

XVIII. If on the same cargo there be a B. contract, and also an ins. made thereon, *the lender on B. shall have the preference of the insurers on the effects that may be saved—only for his capital.*

Then, under the head of "Insurance," wherein it is defined who and what may be insured, there are the following:

XVI. We expressly forbid those who take up money on B. to have ins. made thereon; under the penalty of the same being declared invalid, and of corporal punishment.

XVII. The lenders on B., under the same penalty, shall not ins. *the profit on the sum lent.*

In the case of *Deguilder* and *Depeister* which came before the English Courts in 1682, the facts were as follows: The master of a ship entered into a B. B., whereby he bound himself, in consideration of £400, as well to perform the voyage within 6 months, as at the end of 6 months to pay £400 and £40 prem., in case the vessel arrived safe, and was not lost in the voyage. But it fell out that the master never went the voyage, whereby his bond became forfeited, and he preferred a bill in equity praying to be relieved: and in regard the ship lay all along in the Port of Lond., and so the lender run no hazard of losing his principal, the Lord Keeper though fit to decree, that he (the lender) should lose his prem. of £40, and be content with ordinary int. on the sum advanced.

The *Danish* Code of 1683 contains the following regulations regarding B.:

1. If a captain, being in a foreign country, has not sufficient cash of his owners to load his vessel, or cannot take up money otherwise, and has not goods to sell to the advantage of his owners, he may mortgage his vessel, tackle, stores, cargo, and freight, with the obligation of bringing three of his best men as vouchers to the owners for his necessity of so doing; and he shall be obliged to pay such money borrowed, as soon as the ship arrives at the port specified in the deed of mortgage; but if he makes another port, against the will of the mortgagee, he shall not only pay the debt, but moreover make good all damage thence ensuing to the creditors.

2. But if he is not at a great distance from the owners, he shall not mortgage without their consent—excepting that part of the ship which is his own; nor shall any creditor have any claim against the owners in such case; but if one or more of the owners have given the captain full power, such of them shall satisfy for themselves, according to the tenor of the powers given.

3. If a captain of his own head, and without any necessity, takes up money on the ship; or without necessity sails to a different port than where he was hired for, he shall make good to his owners all loss thereby sustained, and be banished from the King's dominions; and if he runs away, leaving the vessel and cargo pledged, whenever he is apprehended, he shall be responsible according to the nature of the affair.

4. Latter deeds of mortgage shall take place for payment before prior ones.

5. If a captain takes up more money on mortgage than the vessel, stores, freight, etc., answer, he, and not the owners, shall make up the deficiency.

6. If a vessel mortgaged is taken, or arrested, so that the captain cannot recover it, he shall make it over in whole, or part, to the mortgagee according to what was pledged; and if the creditor recovers it, he shall, reserving the expenses and debt, return the overplus of the value to the owners.

7. If a vessel is lost, the debt is cancelled. But if any goods, for the freight of which the captain is to be paid, are saved, or any part of the ship or stores are recovered, the mortgage and int. thereof shall be paid, as far as the freight will go if the whole ship was pledged; but if only a part was pledged no more shall be paid but the proportion of that part. If any accident happen to the vessel mortgaged, by the manifest fault or negligence of the captain, he and all he is worth shall answer to the creditors for the money lent.

8. A mortgagee shall take care to have his debt paid within six months after the arrival of the ship at the port specified in the deed, or lose his right; but during that space his right is inviolable, *though the vessel is sold.* But if by agreement, the money lent is to be repaid on the return of the vessel to the port from whence it sailed, and it returns not within a year and a day, the money then immediately demanded, and not paid at the fixed time, shall thenceforward bear int.

The case of *Goddart* and *Garret* came before the Courts of Equity in 1692, under the following circumstances. Garret had lent £300 on a B. B., and afterwards ins. £450 on that ship with Goddart and others [for £6 6s. p.c. prem.] as int. for money lent, etc. The ship outlived the time at which the Bottomry money was repayable, and was afterwards lost in the E. Indies. Garret recovered the money on the B. B., and afterwards

sued the insurers upon their pol. Goddard, and others the insurers, resisted payment, and brought their bill in equity to be relieved, on the ground that the money ins. by the pol. was the money lent upon the B., and that Garret was not otherwise interested in the ship; and that the money being paid on the Bottomry, the pol. ought to be given up. The Court decreed the policy to be given up.

Leybourn, in his *Panarithmologia*, 1693, says :

This way of lending money, or *Bottomery*, is much used now-a-days; it hath its name derived from the bottom of the ship or keel, and is practised in this manner: a master of a ship going to the Indies, Straights, Denmark, or any other part of the world, wants £100 to carry out in any commodity he thinks he can make a profit by; you lend him £100, and agree with him to have for this £100, £130, or £140, or £150 (or what you can agree for), at the ship's return. But if the ship happens to be sunk, burnt, taken, or any manner of damage happen that the ship comes not home, then you cannot recover one penny of the money that you lent of the man that borrowed it, nor arrest his body; *for he is to pay you at the return of the ship*, and not at the return of his person.

The general way now is to lend £100 at 30 or 40 p.c., and then you go and find out one that will assure the ship, outwards and inwards, for a small matter, it may be 4, 5, 6, p.c. (as you can agree), the longest voyage; and if the ship be lost, you recover both principal and advance of the insurer (deducting only what the ins. comes to), and thus you are upon certain grounds; for he that lends his money on B. and insures it, generally (whether the ship be lost or comes home) gains at least 22 or 23 p.c., if his money were lent at no more than 30 p.c. And men are now-a-days so cunning, that they will not only have part of the ship mortgaged unto them (for their money), but will have some merchant or sufficient person that shall be engaged for it, and so have the borrower's bond as well as the ship, and his body bound as well as the voyage; which thing is seldom condescended to but where the borrower's necessity is great.

This way of taking up monies is likewise much used amongst masters of ships, that by any bad weather or other strait or emergency whatsoever, do put into any port in any kingdom, and there repair their ship, and buy what's necessary for them; and wanting money to do the same with, they repair to some merchant, and he having the ship's name and the master's, and of what place she is, and her owners' names, will advance this money at B.; and if the ship comes safe to her intended port, the said merchant hath his money; if not, and the ship be lost, he hath nothing; nor can he recover any against the master or owners, but only against the ship. Indeed, this causes many cheats: *many men have brought their ships safe to the river's mouth, and there have sunk them on purpose to avoid the payment of the monies they owed at B.*

He (Leybourn) justifies the high rate of interest demanded in B. transactions, using the language of Molloy, already quoted.

There seems to have been a doubt previous to this period whether a loss by the attacks of *Pirates* was one of the risks which the lender on Bottomry had by his contract undertaken to bear. The point came on for argument in the Court of King's Bench, during the reign of James II., in the case of *Barton v. Walliford*; and the Court was of opinion that *piracy is one of the dangers of the sea*. [1688.]

Bottomry was practised in *Holland* at a very early period. A famous merchant, Adrian Verwer, writing in Amsterdam in 1711, gives a declaration, signed by several of the most eminent merchants of that city, dated 17 Sept., 1699, to the effect that the lender of money on Bottomry was not obliged to contribute to any *gross average*, and "by tradition had learned that it was the same in former times."

During the war in the reign of Wm. III., 1689-1702, the rate of marine ins. to the East Indies and back was 22 p.c.; and the rate for loans on B. was often as high as 55 p.c. "The rate of int. for money taken on B. was always more or less affected by the causes which led to an advance in the rate of ins.—and affected, by reason of the nature of the contract, in an intensified degree."—*Chambers*.

In the case of *Dandy and Turner*, which was before the Courts in 1701, the facts were these: A part-owner of a ship borrowed money upon a B. B., payable on the return of the ship from the voyage she was then going in the service of the E. India Co., and the E. I. Co. broke up the ship in the Indies. The owners brought their action against the Co., and recovered damages; but they did not amount to a full satisfaction. The lender brought his bill, to secure his proportionable satisfaction out of the money recovered. But his bill was dismissed, and he left to recover as well as he could at law: *for a Court of Equity will never assist a B. B. which carries an unreasonable int.*

During the war in the reign of Anne, 1702-14—the rate of marine ins. to the E. Indies and back was 16 p.c. The rate for loans on Bottomry was 45 p.c.

In the case of *Harman v. Vanhatton*, which came before the Courts in 1716, the facts were as follow: Vanhatton lent Harman £250 on a B. B., and afterwards ins. on the same ship; but the scope of the voyage was larger in the pol. of ins. than in the B. B.—there being liberty to go to other ports and places. The ship being lost, Vanhatton recovered the money on the pol. of ins., and also put the B. B. in suit. The latter on the ground of the ship having deviated from the voyage specified in the bond. Harman filed his bill to restrain, asserting that Vanhatton ought not to recover both on the ins. and on the bond—he having ins. only in respect of the money he lent upon the bond. All the risk he had run on the ins. was paying the prem. The Court held that Vanhatton *having paid the prem.*, was entitled to the benefit of the pol. "And the insurers might as well pretend to have aid of the B. B., and to discount the money recovered thereon, as Harman to have the money recovered on the pol. to ease the B. B."

By stat. 6 Geo. I. c. 18 (1720)—the Act for incorp. the *Lond. Assu.* and *Royal Exchange Cos.*, and giving them the exclusive privilege, as corporations or partnerships, of lending money on *bottomry* in *Gt. Brit.*, there is a special exemption (sec. 26) in favour of the *South Sea Co.* and the *East India Co.*, that they might so lend on the bottom of any

ship, and on the goods on board any ship in the service of the said Cos. respectively, to any captains or other persons employed in the service of the cos. notwithstanding the passing of such Act. Subject to such special exemption, the Act provides :

And if any corp. or body politick, or persons acting in such so. or partnership as aforesaid, other than the two corps. intended to be estab. by this Act, or one of them, shall presume to lend, or agree to lend or advance by themselves, or any others on their behalf, after the said 24 June, 1720, any money by way of B., as aforesaid, contrary to this Act, the bond or other security for the same shall be *ipso facto* void, and such agreement shall be judged to be an *usurious contract*, and the offenders therein shall suffer as in cases of usury.

In that same year a co. specially desigined to make advances on B. had been set on foot, called *Beele's Bottomree*.

A correspondent in *Mist's Weekly Journal* for 9th Jan., 1720 [was it De Foe?], gives an amusing account of some of the projects of that period, and then proceeds :

Successive to these bubbles we have had another pub. for a subs. of a million also—for they cannot, it seems, talk of less on any account, and what should this be, but as mentioned, to lend upon B., that is to say, to lend money upon the risque of the bottom of the ship; so that if the ship comes home the borrower is obliged to repay, with the sum agreed added to the sum borrowed. If the ship is lost, the lender is to bear his own loss, and the money sinks with the bottom. But it would be of publick service, Mr. Mist, if you would fully expose that scandalous project.

What villanies have not been practised by masters, captains, and owners of ships and cargoes, upon such occasions as this of B.? I need not tell you, Mr. Mist, who perfectly understand sea affairs, how it is come to that pass in trade, that when we know a master or captain of any ship has taken up money upon the bottom, no wise man will send any goods on board that ship, nor any insurers underwrite upon her, except only goods bound to the East Indies.

Since then this is the case, I recommend to you, Mr. Mist, that you will desire of these B. lenders, that they will make it a condition of their management, that every ship that goes to sea, upon whose bottom they shall lend any money, shall be entered in a book, and that book lie always open upon their table, for all merchants to look over at pleasure. . . .

In a previous part of the same letter, he had spoken of that old "fire-ship adventure of Bottomree." We fear his inferences were but too true.

By the Ins. Ordin of the City of *Rotterdam*, promulgated 1721, we find the following provisions regarding B. :

CXXXIII. When the masters have occasion for any money across the seas, whether it be beyond *Dover*, or past the *Sound* and having no goods of his owners on board, or that he cannot dispose of them at a reasonable rate, or at least not so much as he has a call for, they may take up money on B.

CXXXIV. Provided the money taken on B., or the sale of goods, do not amount to above *one-eighth* part of the value of ship and cargo, unless in cases of the utmost necessity.

CCL. Creditors who have lent money on B. shall be preferred before all other bond creditors, excepting the ship-builders, who are to be preferred to the B. B.

CCLI. Among those who have lent money on B., the younger is to be preferred to the elder.

In a form of B. B. in use in *Cadix* in 1725, we observe that it had become the custom of owners of ships there, on borrowing money for their expeditions, to pledge the ship's value, together with all its emoluments, wherein the *freight* was included.

In 1729 Mr. Joshua Gee pub. a work : *The Trade and Navigation of Gt. Brit. considered*; and therein he says : "The nation in Queen Elizabeth's time being in its infancy in trade, set out with great frugality, and saved money and grew rich apace; and our merchants spread themselves over all Europe, Turkey, and America, as well as India, and introduced our manufactures and products wherever they went. Their riches increasing by this traffic, they not only had money enough to carry on their trade, but supplied foreign princes, *lent money upon Bottomry*, and upon commodities in all countries."

By the Ins. Ordin. of *Konigsberg*, 1730 [frequently called the *Maritime Law of Prussia*], it is provided :

XII. The creditor or lender of the B. money shall be allowed to ins. his cap. lent, together with the prem. paid the insurer, but not the stipulated *agio*, or other profits of the B.; but ins. made by the debtor, or borrower on B., on the same goods and ships so bottomried, shall be of no effect, and void and punishable.

Chap. VII. treats of B. entirely. We can only notice the more important provisions. Thus :

I. He who advances on B., that is, lays down either ready money or the value of it, on a ship or goods shipped, under obligation that if the same shall be lost, he shall also lose his deposit, without any claim or return, *shall be allowed to contract for as high an int. as he and the borrower can agree upon*.

II. In the contract, and likewise in the whole procedure relating to B., the contracting parties, particularly the master of the ship, and the broker who may be employed in transacting the contract, shall, on the penalty of severe punishment in goods, body, or character, together with reparation of all damages occasioned thereby, proceed justly and uprightly, without fraud, and not insidiously draw in any one to advance money or anything else, on a deceitful B.

Sec. III. defines whether and when a master may take up money on B., against the owner's consent. IV. When and how a master of a ship, being abroad, may take up money on B. V. The lender on B. acting contrary to the preceding art. has no redress on the ship. VI. That is included under the mortgage of the bottom of the ship. VII. Duration of the hazard on B. VIII. Concerning B. goods returned. IX. Payment to be made within 8 days after the arrival of the B. goods. X. Or after they are duly sold; and if proceeds insufficient, no further claim or demand upon the borrower.

XI. The preceding art. shall take place, although the borrower shall have engaged both his body and goods for the sum taken up; this engagement being to be understood *only as a security that he shall act fairly and justly in the things so Bottomry'd, that the lender may not suffer by his neglect*,

mistakes, or dishonesty; and in case of any such thing, that he shall, with his person and substance, make good all losses.

XII. No payment after loss of things bottomry'd. XIII. Damages incurred by any *fault* to be made good by offender.

XIV. The like to be observed concerning any bottomry'd goods damaged or lost through the fault of any one; *but in case the damage or loss arises from their own natural decay, or the fall of the price, and thus are not equivalent to the B., the proprietors shall not be entitled to compensation by cession, or legal sale, but must duly stand by the contract.*

XV. Upon proof of *fraud*, the B. to be paid, though the goods or ship be lost. XVI. The last bond to be paid preferably to the others. XVII. A third possessor of the bottomry'd things cleared upon payment of value. XVIII. An action for B. demands to be brought within a year and a day after arrival of the ship.

In the Ins. Ordin. of *Hamburg*, 1731, there are the following brief provisions only :

Title 9.—Of assurances upon money lent upon goods going by sea and B. I. When any person lends money on B. *he may make his assurance to the full, for principal, int., and prem.* II. Whoever insures upon B. is free from all average, and not liable to contribute thereunto.

Among the forms ordered by this Ordin. to be “pub. in print, in the German language, and whereof everybody is to make use in assu.,” was the following :

Policy for money lent at B. on a Ship, or Goods, or Freight.—We, the underwritten assurers, for ourselves and heirs, assure unto . . . , each of us for the sum underwrote by him hereunto, upon receipt of . . . prem. upon B. money, which he has advanced on the bottom of the ship [or upon goods, and likewise the freight shipped on board of the ship] called the . . . , whereof . . . or any other is master, from . . . to . . . , where she is to unload and discharge her cargo; Pray God conduct her in safety! We take upon ourselves the danger and risk of all accidents and misfortunes which may befall or happen to this ship [these goods], to the whole or part thereof, in any shape whatever during this present voyage; whether it be by perils of the Sea, Storms and Tempests, Shipwreck, Running ashore, being Sailed over, Fire, Carelessness and Steering Wrong Courses, Arrests and Restraints of Kings, Princes, or Republicks, being taken and carried in by Enemies, Reprisals and Confiscations, forcible Plundering of Privateers or Pirates, Mistakes or Bad Conduct of the Master and his Mariners, and by any manner of accident, whether to be imagined or not, from the Day or Hour that this Ship did begin to take its cargo or ballast on board [that the goods on which the money is lent are carried from the shore on board of . . .] till it is arrived at . . . , and has there discharged her whole cargo. We put ourselves entirely in the place and stead of . . . , to keep him harmless from any loss; and we promise, in case any misfortune or damage should happen to this ship, or these goods the money is lent upon, or to the freight, by the above-mentioned, or any other manner and means, that we will pay to . . . the sums by us respectively underwrote hereunto, or such part thereof as shall be sufficient entirely to indemnify him, with all his extraordinary expenses, within two months after due notice has been given, that the requisite proofs exhibited of the loss or damage, and this fairly and justly without any contradiction.

We accordingly submit ourselves to the Ordin. relating to assu. and averages of this City of *Hamburg*, with all the clauses and conditions thereof, as well as printed, as those added hereunto in writing, which last are esteemed at least of equal value, if not preferable to the printed ones. For the true performance whereof we bind all our goods and chattels without any fraud or deceit. Thus concluded by . . . , Sworn Broker. *Hamburg*, the [day of], etc.

By the Ins. Ordin. of *Bilboa*, approved and confirmed by King Philip V., and the Royal Council of *Castile*, A.D. 1737, there is a special division treating “Of the contracts of money on goods that are given on B., or risk of a ship; and the form of the bonds.” It commences as follows :

I. As it is usual in this commerce to give and take money and effects on B., or risk of ships, for certain int. or prems. upon ships' bottoms, apparel, provisions, arms, and other necessities for a voyage or voyages, or upon goods or effects loaden in them for any ports and voyages, with condition that the ships arriving at those they are bound to, the lenders are to remain free from the risk of such sums for the recovery of their principals and prems. at the time agreed on: It is agreed and commanded that in such cases they make writings, or contracts before notaries public, or between the parties, by means of a broker, or without him, according as it has been or is customary; with the contracts, clauses, and circumstances, in which they shall agree, and covenant; and that to the one, and the others, entire faith and credit be given.

Clause II. provides that not only the ship and appurtenances, or goods, but the freight shall be hypothecated in favour of the lender.

III. No more than *three-quarter* parts of its value may, for any motive, be taken at B. on the body and keel of the ship, appraising it by skilful men, named by the borrower and lender; on penalty that on acting to the contrary, and it being opposed by either of the two, it shall not be heard, nor admitted in judgment.

IV. Neither on goods loaded may it exceed the value that they shall have in the port where the risk shall begin to run, on penalty that if the contrary be proved, the borrower shall pay the principal sums and their prems., although the loss of the said goods should happen.

V. Neither may money, or effects taken on B., or risk of ship, upon freight, or sailors' wages, *when they shall be in voyages regulated by months*; but it may be given to the captains, officers, and sailors, that shall sail to the *whale* and *bacallas* fishery; the captain's intervention and consent preceding for what regards the seamen.

Sec. VI. provides that no person shall advance money on B. in the port to which the ship belongs, except in cases where, there being joint owners, any one or more shall refuse to contribute his or their proportion for necessary repairs. VII. When any person has lent on B., and neglected to recover, any such loan obtained for a subsequent voyage shall have priority. VIII. Where goods suffer damage from their own bad quality, or from neglect, the lender on B. not to suffer for same.

IX. In regard that all jettisons, ransoms, compositions of ships, masts and rigging cut away for the common good of ship and cargo, and whatever else is comprehended in a gross average, always results to the advantage of him who shall have given money on them at B.; it is ordained, that he or they

ought to contribute in these cases to the payment of the *pro rata* that shall touch them, but not to single averages, unless the contrary shall have been agreed on in the instrument or contract, as is expressed in the preceding number.

Sec. X. contains provisions as to time such contracts are to run, when same not noted in contract. XI. In case of loss, shipper to prove that he had the goods on board. XII. When all the goods against which loan obtained be not taken on board, contract to be modified. XIII. In case of wreck of ship, salvage of ship or goods to belong to those advancing on same at B. XIV. In such case the lenders on B. to be preferred to the insurers. XV. All writings and contracts to be extinguished in case of loss of ship or goods. XVI. With a view to "avoid lawsuits and differences which are wont to arise between those who give and those who take money on goods and B., or risk at sea," forms of policies are given. That for a loan on a ship is different from those already given, and hence we quote it as follows :

Be it known that I, . . . , inhabitant of . . . , owner or captain of the ship named . . . , of the burthen of . . . tons, that is now riding and anchoring in . . . , say, that forasmuch as I have borrowed of . . . , inhabitant of . . . , £ . . . to make a voyage to . . . , and for that purpose and its expedition he has given and lent to me, of which I declare myself contented and possessed, as having received it, and it being passed into my power, really and effectively, in good common and current money (upon which, its delivery not appearing now, I renounce the exception of the *Non numerata pecunia*, Laws of the delivery and proof of its receipt), I carry them at the risk of the said . . . , who gave me them upon the said ship, and upon its rigging, sails, anchors, guns, ammunition, and the other appurtenances, freights, and profits, and of the most certain and secure that shall be saved of the said ship from the sea in winds, storms, fires, enemies, corsairs, and other bad people and risks that may supervene from the time of the said ship's getting under sail, and going out of the aforesaid port where she is, in prosecution of her voyage, until she arrives at that of . . . , and being in it in safety, and twenty-four natural hours passed after anchoring, the said risk shall cease; and then I oblige myself to pay to the said . . . , and to him that shall have his power or order, or shall represent his right, the said £ . . . in good current money on . . . or before, if the said ship shall have arrived before at the aforesaid port of . . . , because from that time the term ought to be deemed finished. And for said sum, and the charges of recovery, he may serve me with an execution; with this writing and his oath, to which I yield, releasing him from any other proof; for the performance of which I oblige my person and estate which I possess, or may acquire; and I especially and expressly hypothecate said ship, sails, rigging, guns, ammunition, and the other appurtenances and freight, that the whole may be subject and obliged; and it may not be sold nor disposed of, until this debt be satisfied, and what shall be done to the contrary is not valid; and this special obligation does not derogate nor prejudice the general, nor on the contrary: and I give power to the Justices of His Majesty, etc.

Then follows the notarial certificate of submission, renunciation, etc., etc.

In another sec. of the Ins. Ordin. for *Bilboa*, dated the following year, 1738, we find the following :

Neither may any person *get the sum assured that he shall take on B. on pain of nullity*; but the person or persons that shall lend it may, for the bare sum which they shall have advanced, without including the prem. they have received for it, under the same penalty.

The Ins. Ordin. of *Amsterdam*, 1744, in setting forth the purposes to which ins. may be applied in that country, says :

XIX. Also ins. shall be permitted to be made on monies given by the ins. to a mariner, master, or other person navigating on any voyage on B., or adventure of a voyage, with the prem. included, provided the sum of money which is paid on B. be inserted in the pol., as also the prem.; otherwise the cap. only shall be understood to be ins.

The ins. shall, in case of loss, either by the ship's being cast away, taken or detained by friends or enemies, and her being missing a year and a day, not be obliged to produce any other proof, but only of the misfortune befallen the ship; and concerning his interest only his B. B.; provided the ins., on being paid, make over to the underwriter all claim on the taker on B., and deliver up to him the writings thereto belonging.

The ins. shall be obliged to insert in the pol. the name of him to whom the money on B. is given, also the name of the ship with which the taker on B. shall navigate, the name of the master, as also whither the ship is bound, on pain of nullity.

If during the voyage the same is altered by the master, not by means of the taker of the money on B., the underwriter shall, notwithstanding, in case of loss, be obliged to pay his engagement.

But the money on B. being given to the master, and the voyage being altered by order of his owners, the ins. shall be obliged, as soon as he receives knowledge thereof, to give notice to the underwriters, and agree with them concerning the altering of the prem., or leave the said altering to the arbitration of the Commissioners; otherwise the underwriters in case of loss are not obliged to make it good, the insured retaining his action only against the master, as receiver of the money.

XX. A master being on his voyage and receiving damage on the hull, or otherwise, and being obliged for the repairing or restoring of his ship, in order to proceed on his voyage, to negotiate money on B. on his ship, the giver of the money shall be permitted to cause the amount of the said B., with the prem., to be ins., although it should happen to appear that the owners, or some of them, had caused the ship, or his share in the same, to be ins. before or after.

XXI. Ins. made upon goods which at the place of their lading, or any where else, are charged to the full with B. are declared null, and of no value; with forfeiture of the prem. for the underwriters, and with penalty of arbitrary correction. But the taker on B., in case he ships more goods than the capital taken on B. doth amount to, may cause that overplus, as also for the gross average, to be ins. The giver of the money or the holder of the B. B. *may also ins. his interest to the full*, with the prem. thereof; provided that in all the bills of lading, or manifests of the lading, the taking and receiving the B. money on the said goods be particularly inserted, with mention of the date, the place from whence, the person to whom paid, and for whose account. This is only to be understood of money given in this country, and from the American Colonies, etc., to this country; *but the ins. being made from other places, the tenor of the B. B. must be observed.*

But in case the order of ins. was previously given by the lader, or it was already executed, the taker of the money shall be obliged to transfer by assignment the right to the said pol. or ins. to the holder of the B.; and in default thereof the insurer shall not only be deprived of his demand on account of the said pol., but his prem. paid be kept by the underwriters.

Ins. made on B. on goods is free of all gross average and diminution of value by their own waste.

Magens, reviewing these latter provisions [1755], did not consider them satisfactory ; and thought it would have been better if the regulations of *France* or *Spain* had been followed.

In 1746 was passed the stat. 19 Geo. II. c. 37 : *An Act to regulate ins. on ships belonging to the subjects of Gt. Brit., and on merchandises or effects laden thereon*, which provided as follows :

V. And be it further enacted by the authority aforesaid, that from and after the said 1st day of August [1746] all and every sum or sums of money to be lent on B. or R., upon any ship or ships belonging to any of His Majesty's subjects, bound to or from the *East Indies*, shall be lent only on the ship or on the merchandize or effects laden or to be laden on board of such ship as shall be so expressed in the conditions of the bond ; and the benefit of salvage shall be allowed to the lender, his agents, or assigns, who alone shall have a right to make assu. on the money so lent ; and no borrower of money on B. or at R., as aforesaid, shall recover more on any assu. than the value of his interest in the ship, or in the merchandizes or effects laden on board such ship, or in the merchandizes or effects laden on board exclusive of the money so borrowed ; and in case it shall appear that the value of his share in the ship, or in the merchandizes or effects laden on board, doth not amount to the full sum or sums he hath borrowed as aforesaid, such borrower shall be responsible to the lender for so much of the money borrowed as he hath not laid out on the ship or merchandizes laden thereon, with lawful int. for the same, together with the assu. and all other charges thereon, in the proportion the money not laid out shall bear to the whole money lent, notwithstanding the ship and merchandizes be totally lost.

It would seem that the preceding regulations were not of general application, but were intended to apply only to ships sailing to the *East Indies*. Lord Tenterden indeed declared that this Statute was introduced for the protection of the trade of the East India Co. The Act had not in other respects such a limited scope. It was provided (sec. vi.), that in all actions brought after the commencement of that Act, the plaintiff should state, within 15 days after being required to do so, *what sums he had ins. upon the whole, and what sums he had borrowed upon R. or B.*, for the voyage or any part of the voyage in question.

In the same year (1746) an Act was passed, 19 Geo. II. c. 32, to amend the laws relating to bankrupts, which recites :

And whereas merchants and other traders frequently lend money on B. or at R., and in the course of their trade frequently cause their ships or vessels, and the goods and merchandizes loaded thereon, to be ins., and where commissions in bankruptcy have issued against the obligor in such B. or R., or the underwriter or assurer in such assu., before the loss of the ship or goods, in such bond or pol. of ins. mentioned, it hath been made a question, whether the obligee or obligees in such bond, or the assurer in such pol. of ins., should be let in to prove their debts, or be admitted to have any benefit or dividend under such commission, which may be a discouragement to trade. For remedy whereof be it enacted, etc., that from and after the said 29th day of October [1746] the obligee in any B. or R. B., and the assured in any pol. of ins., made and entered into upon a good and valuable consideration, *bond fide*, shall be admitted to claim : and after the loss or contingency shall have happened, to prove his, her, or their debt and demands, in respect of such bond or pol. of ins. in like manner as if the loss or contingency had happened before the time of the issuing of the commission of bankruptcy against such obligor or insurer.

And they were to receive their proportionate dividend.

By the 21 Geo. II. c. 4, 1748—*An Act to prohibit assu. on ships belonging to France, and on merchandises or effects laden therein during the present war with France*—all His Majesty's subjects were prohibited from lending money on B., or R., on any ships or goods belonging to *France*, or to any of the French dominions or plantations, or the subjects thereof ; and all such contracts and agreements were to be void, and the parties, and any agent or broker intervening therein, were to forfeit £500.

In the Ins. Ordin. of the City of *Stockholm*, 1750, among the things permitted to be ins. against are *B.*, *Cambio Marino*, etc. ; and among the forms of pol. ordered to be printed in the *Swedish* language is one for such risks ; but we find no regulations otherwise regarding B. The form of pol. so much resembles that already given for *Hamburg* [1731], that we need not insert it. Two p.c. was to be deducted by the insurers in case of *total loss* ; and they held themselves free from all averages and charges arising from demurrage.

In 1750 Wyndham Beawes pub. his *Lex Mercatoria Rediviva*, etc. He deals with the subject of B. ; but we do not find any views of the subject not already presented by other writers.

In the leading case of *Chesterfield v. Janssen*, which came before the Courts in 1750, and which will be more especially referred to under USURY, Mr. Justice Burnett said that "the true reason why the Court holds B. B. good is because they are not against the Statute, as by a hazard he runs, he may be entitled neither to principal nor int." And Chief Justice Lee said on the same occasion : "Bottomry bonds are held good, not because they are for the benefit of trade, but because the whole is at hazard."

But it seems clear that it is not the mere form of B. B. that keeps them out of the Statute, for the matter was put as follows in the last-named case : Suppose a contract was made for a ship's return to Newcastle from Lond., or to Dover from Calais, at a season of the year when there is little or no danger, would not the Courts look at this as colourable and a mere evasion of the Statute ? And in the case of *Joy v. Kent* it appears very plainly from what the Court said there, that even a B. B. may be an evasion of the Statute as well as any other contract, or Lord Justice Hale would never have sent it for trial.—*Plowden*.

By the 25 Geo. II. c. 26, 1752, it was prohibited to make ins. or to lend money on B., or R., on foreign ships, or goods, bound to or from the *East Indies*. This Act, like that

of 1746, was designed to secure the monopoly of the East India Co., by preventing ordinary marine ins. or B. ins. from being effected on the ships of any other co., or on merchandize carried by any such ships.

In 1755 Mr. Nicolas Magens pub. his famous *Essay on Insurances* [first ed. pub. in *Hamburg*, 1753], and therein he observes :

Ins. is everywhere allowed to be made on money lent on B., that is (as was before observed), on the keel or bottom of a ship; or on certain goods specified and shipped on such a bottom (which we understand by the term *Respondentia*), and for which money usually a bond is given by the borrower, wherein are set forth the conditions of the loan, and what prem. is paid for it. This prem. is something more than the common int. of money, with the add. of a prem. of ins. In consideration of it, the lender takes on him the sea-risk of the ship, or goods, on which he has lent his money, and so is in fact an insurer to the borrower; and if he causes himself to be ins. it is as a re-insurance. The insurers must be governed, in these cases, by the usual custom of such contracts in the countries where they are made, which greatly differ.

These differences we have already shown. It is important to note from so great an authority as Magens that the nature of the contract of B. was still preserved intact.

Cunningham, in his *Law of Bills of Exchange*, pub. 1759, says if the B. loan be not repaid, "the lender shall have the ship;" but we assume this would be true only to the extent of realizing his advance. He objects to the term *Usura Marina*; for "notwithstanding the interest in these contracts is always much larger than the Law prescribes for money lent on landed securities, yet it is never accounted *usury*; as marine loans are furnished at the hazard of the lender, which the others are not; and where the risk is greatest to the advanced monies, the profit ought in reason to be so too." Again, "money lent on B. is commonly on the ship only, though sometimes it is upon the person of the borrower, and sometimes on both."

Valin, in his famous *Commentary on the French Ins. Ordin.*, pub. 1760, says that some writers of the French nation had supposed that this contract was wholly unknown to the ancients, and that it was peculiar to France alone: a view in which he did not agree. He says, in this same commentary, "A B. contract, and a pol. of ins., as depending on the same principles, are subject to the same risks, consequently to all the same *averages*: and the insurer, being in the place of the lender on B., is equally entitled to share in case of *salvage*."

In the case of *Glover v. Black*, 1763, the facts were as follow: A pol. of ins. was made 16th Dec., 1760, on goods and merchandizes loaden or to be loaden on board the ship called the *Denham*, whereof Wm. Tryon was master, "at and from Bengal to any ports or places whatsoever in the East Indies until her safe arrival in Lond.," which pol. was underwritten by the defendant Black for £200 at 10 p. c. prem. Before the underwriting of the pol., the plaintiff Glover had lent to the master of the ship £764 at *Respondentia*, for which R. bond was executed by the captain and another. The ship, and all her cargo, were burnt on 31st March, 1760, within the limits insured. The plaintiff asserted that *Respondentia* was an interest that might be ins. The defendant admitted that upon an *East India* voyage there were five things which might be ins., viz. Goods, *Respondentia*, Bottomree, Freight, and the ship itself, but it was absolutely necessary that each interest be specifically mentioned in the pol. In this case the R. interest was not so mentioned. Lord Mansfield delivered judgment:—The Court were satisfied of its being a fair ins.; but there was the omission to specify the interest ins. He said, *it was estab. now, as the law and practice of merchants, that both R. and B. must be mentioned and specified in the pol.* The plaintiff was therefore nonsuited.

It was in the course of this judgment that Lord Mansfield said: "*I have looked into the practice, and I find that bottomry and respondentia are a particular kind of ins. in themselves, and have taken a particular denomination.*"

In 1775 Mr. Thomas Parker pub., *The Laws of Shipping and Ins., with a Digest of the Adjudged Cases*; in which he gives an outline of the legal aspect of many questions arising under B. contracts; but several of the more remarkable of these we have noticed already.

In 1781 John Weskett, Merchant, pub. *A Complete Digest of the Theory, Laws, and Practice of Ins.*; wherein he says, "B. contracts have everywhere been made use of long before ins. In former times they were made only on the body and keel of the ship." He reviews the practice in other countries, and then adds, "As then we have no fixed laws or rules, universally known in England for settling *partial losses* on B. monies, it is the business of the parties to consider what accidents they are exposed to, and to have provisions made in their B. B., expressed in a clear and distinct manner how they are to be understood." He adds:

This branch of business is best understood in *Spain*. The great sums that are required to fit out a ship for the Spanish West Indies, and for obtaining a licence from Court to go with register, rendering it necessary to borrow money on B. on almost every such expedition; and the variation of many circumstances which occur, teaches their notaries to provide in their contracts for things that people in other countries do not think of. We find in their form of bond this condition expressed: that the lender shall run, in partnership with the owner, "the risk on the hull, keel, and earnings of the ship"—which is saying a great deal in few words.

Pothier, who wrote a learned work on Contracts towards the close of the last century (1781), devoted a chap. to contracts of marine ins., including B. He strongly advocated the legality of the contracts of B. and R.

Emerigon, in his learned *Treatise on Assu.*, pub. 1783, took the same view as Pothier regarding the legality of the contract of B. His reasoning is at once clear, learned, and conclusive :

All our authors agree that the contract of maritime loan is lawful. It has been authorized by the Ordin. [of *France*]. It has a character and nature proper to it. I lend to Pierre 1000 crowns at a maritime int. of 12 p.c. for a voyage. If the voyage is fortunate, he is to repay me the principal and the stipulated int. If the vessel perishes, Pierre is discharged from the whole obligation. My capital then is at risk. I wish to have it insured. It is apparent that this ins. cannot be subs. by the borrower himself; for it is only in consideration of the maritime risk, from which he is discharged, that he has promised me an int. of 12 p.c. more or less. If he should become my insurer, the essence of the contract would be destroyed between him and me; and it would be only a masked usury.

But nothing prevents my effecting ins. on my cap. with a third party. This injures in no respect the principles of my contract with Pierre. In case of safe return, I shall have my cap. and the int.; but I shall lose the prem. earned by the insurer. If the vessel perishes, I lose the maritime int., and the insurer will reimburse to me my cap., less the prem., and also the *tenth*. [Under the Maritime Ordin. of *France* ins. might only be made for *nine-tenths* of the value.] One cannot discover in all this any trace either of usury or of unlawful agreement. Such is the doctrine of the authors cited, and also of Ansaldo and Scaccia.

It is a species of re-insurance to which the lender has recourse, to remove from himself to a third party the maritime risks for which he is bound towards the borrower. Here is a case however not exempt from doubt: I advance you on maritime loan 100 crowns on condition that if the ship perishes you shall repay me one-half of this sum; but if the ship arrives you shall pay me my entire cap., and 20 p.c. maritime int. Silvestre maintains this contract to be usurious, because one and the same person cannot be borrower and insurer for the same object. Rocas says, on the contrary, that the contract is lawful, because the perils become common to both parties: *Quia uterque se exponit incommodo*.

I do not believe such a doctrine has been adopted among us. The nature of the contract is opposed to it. It would be intolerable that the borrower, who, by the shipwreck, has lost all that he had in the ship, should remain debtor for part of a debt, on which the maritime int. had been stipulated in consideration of the maritime risks to which the lender is subjected by force of law. It is quite enough that the latter is permitted to effect ins. on his cap.

In different countries of Italy it is permitted to advance sums on maritime loan, with the clause *voto per pieno* [empty for full], that is to say, with agreement that if the ship arrives safe, the cap. and the maritime int. shall be paid to the lender, though the borrower may have laden nothing on board; and that in the contrary case, the borrower shall be released from all obligation; this is a species of wager. If the lender has effected ins. on his cap., and the ship on which the borrower has laden nothing perish, the insurers will be discharged, unless, says Casaregis, the ins. has been made in form of wager; which, he adds, is forbidden in Genoa. . . .

In Italy the lender may effect ins. not only on his cap., but also on the maritime int. . . .

Although the decision in *Glover v. Black* has always been upheld, yet in a subsequent case before Lord Mansfield—*Gregory v. Christie*—decided in 1784, it was ruled that money expended by the captain for the use of the ship, and for which *respondentia* int. was charged, might be recovered under an ins. in "goods, specie, and effects," provided the usage of the trade, which in matters of ins. is always of great weight, sanctions it. This case was an action upon a pol. of ins. on "goods, specie, and effects," of the plaintiff who was also the captain, on board the ship; the plaintiff claimed under that ins. money expended by him in the course of the voyage for the use of the ship, and for which he charged *respondentia* int. Lord Mansfield said to the question whether the words "goods, specie, and effects," extended to this interest, I "should think not, if we were to consider only the words made use of. *But here is an express usage which must govern our decision.* A great many captains in the *East India* service swear that this kind of interest is always ins. in this kind of way. I observe the person ins. here is the captain."

In 1786 Del Signor Baldasseroni pub., in Florence, his famous work on *Maritime Ins., B., and R.*, in which was given a collection of the then recent decisions of the Rota Romana, and of the Civil Courts of Genoa, Pisa, and Florence. The learned author was Judge of the Revenue Court of Leghorn.

In 1787 Mr. James Allan Park pub. his well-known work, *A System of the Law of Marine Ins., with Three Chaps. on B., etc.* This learned writer, following Pothier, says :

The contract of which we treat is of a different nature from almost all others; *but that which it most resembles is the contract of ins.*; for the lender at B. or R. runs almost all the same risks with respect to the property on which the loan is made that the insurer does with respect to the effects insured. There are, however, some considerable distinctions; for instance, the lender supplies the borrower with money to purchase those effects upon which he is to run the risk; not so with the insurer. There are also various other distinctions.

But however similar they may be in other respects, they differ very much in point of antiquity. We have formerly endeavoured to show that the contract of ins. was certainly unknown to the traders of the ancient world; but it is equally clear that with the contract of B. or R., or what was equivalent to it, they were perfectly acquainted.

Speaking of the differences between B. and R., and recognizing the distinction we have already laid down, viz. that the former is an advance upon the ship, the latter upon the goods, he adds :

But in all other respects the contract of B. and R. are upon the same footing; the rules and decisions applicable to one are applicable to both; and therefore in the course of our inquiries, they shall be treated as one and the same thing, it being sufficient to have once marked the distinction between them.

After reviewing various authorities, Park says, "It is of the essence of the contract of B., that the lender run the risk of the voyage; and that both principal and int. be at hazard; for if the risk go only to the int., or prem., and not to the principal also, though a real and substantial risk be inserted, it is a contract against the Statutes of Usury, and therefore void."

About 1790 Mr. [afterwards Lord] Erskine pub. his *Reflections*, wherein he ingeniously

accounted for the excessive int. upon these bonds being allowable upon the grounds of trade :

On this principle alone the law allows pol. of ins., bonds on *respondentia*, and on ships and their cargoes. Exceptions to the general rate of int., founded on the truest spirit of commerce, and therefore vacated on the shadow of injustice or oppression, their end not being to permit artful and enterprising men to grow rich at the expense of fools, or the profligate to riot in misfortune, *but to share the burden of human losses among a number*, which in great concerns would oppress and ruin individuals ; to bid defiance to the elements, the waves, and every accident of life, and by a prudent communication of a share of prosperity, to avoid the possibility of poverty.

Englebrecht, in his *Corpus juris nautici*, pub. at Lubeck, in 1790, considered that B. loans might be divided into four classes : 1. Where the owner of the ship procures the loan *before he has ins.* 2. Where the party going on a distant voyage is compelled to sell or pledge goods on B. 3. Where the master to repair the damages sustained by the vessel is compelled to take up money on *ship and cargo*—the whole being previously ins. 4. Where, in a strange port, for prosecution of the voyage, and for the benefit of the *ship alone*, without the responsibility of the shippers, the master takes up money *when the ship is ins.* These distinctions are too fanciful. Those of *Benecke* [1824] are much more practical.

As an indication of the niceties which arise under B. loans, we may take the following : If money be lent on ship-board by a merchant or passenger, and before the day of payment the ship happens to be cast away ; if there be such a saver as will admit of a contribution, the party lending is not to have his whole money, but it shall come into the average ; because if that money had not been so lent, it would have been in common danger with the rest ; but if the time appointed were past before the misfortune happened, then the borrower must repay the lender his whole money free from contribution. Therefore many of the Ins. Ordin. provide that in case the borrower detains any money thus lent beyond the appointed time for the repayment, he shall on his return from the voyage not only pay the profit agreed on before, but be also obliged to augment the same according to the longer time accrued since the day of payment.—*Chambers*.

In 1796 Mr. Francis Plowden pub. his able *Treatise upon the Law of Usury and Annu.* ; wherein he says :

All cases of B. are grounded upon the reality of the hazard, and therefore are not within the Statutes of Usury, and the excessive int. that is allowed to be taken upon such contracts is not permitted in favour of trade, but for the reason already mentioned, and because there are not words in the statutes that reach B. B. This doctrine was most expressly recognized in the famous case of *Chesterfield v. Janssen*.

In 1802 Mr. Samuel Marshall, Serjeant-at-Law, pub. *A Treatise on the Law of Marine Ins., B., and R.* These latter subjects were treated of more completely than by any former legal writer here. We can only notice a few points :

Formerly the practice of borrowing money on B. was more general in this country than it is at present. The immense capitals now engaged in every branch of commerce render such loans unnecessary ; and money is now seldom borrowed in this manner, but by the masters of foreign ships, who put into our ports in need of pecuniary assistance to refit, to pay their men, to purchase provisions, etc. Sometimes officers and others belonging to ships engaged in long voyages, who have liberty of trading to a certain extent, with the prospect of great profit, but without capitals of their own to employ in such trade, take up money on R. to make their investments ; but even this, as I am informed, is not now very frequently done in this country.

Again :

This contract is of great utility in a country where the persons engaged in trade have not a sufficient cap. to carry on their foreign commerce, by inducing those unskilled in trade to embark their money in it ; and thus is formed a sort of partnership between the lender and the borrower, in which the one supplies cap., the other skill and experience ; the one takes upon himself the perils of the sea, and the other compensates by a share of the profits of the adventure. But except in this respect, this contract has no resemblance to a regular partnership—having in it no community of cap., no community of loss.

The analogy between this contract and that of ins. is much stronger. In the one the lender, in the other the insurer, is liable to the perils of the sea ; the one receives the marine int., the other the prem., as the price of the risk, which varies in each according to the length and dangers of the voyage. The lender and insurer are in general exposed to the same perils, which have the same commencement and end. Both are entitled to the benefit of salvage, and liable to general average. The marine int., like the prem. of ins., is not due if no risk be run ; though this be prevented by the voluntary act of the borrower.

Again :

The author of *Le Guidon* says that there is but little resemblance between the contract of B. as in use in modern Europe, and the *Naticum fœnus* of the Romans. But with all due deference for the learned author of that treatise, it seems to me that, upon an attentive comparison of the one with the other, it will be found that they are still, in principle, the same ; and only differ in the forms which modern regulations have given to the contract now in use.

A person indebted to the owners of a vessel cannot lend money to her master on B. He should satisfy his debt, and there would be no necessity for the loan.

The master cannot hypothecate the ship for a debt of his own, nor for a debt incurred in a previous voyage.

Then arises a question of International Law :

In a former part of this work it was shown that no Brit. subject can legally trade with the enemies of the State in time of war ; and therefore an ins. upon such trading is void. It was also shown that the ins. of ships and effects of the enemy has, on several occasions, been prohibited by statute ; and many arguments and authorities have been adduced to prove that, even at Common Law, such ins. are illegal. It is needless to repeat those arguments here, *every one of which applies with equal, if not greater force*, to prove that the lending money to the enemy upon B. is illegal, if not highly criminal.

Finally :

It is a general rule of maritime law that money may be lent on B. or R., on any object which may be the subject-matter of ins. It may be lent on the body, tackle, furniture, provisions, and freight of the ship; upon all or any part of the cargo on board; or upon ship, freight, and cargo.

In 1802, also, Mr. Charles Abbott [afterwards Lord Chief Justice Tenterden] pub. *A Treatise of the Law relative to Merchant Ships and Seamen*; and therein he treats incidentally of B. and R.

In this same year there was before our Admiralty Court the case of the Hamburg ship *Jacob*. The question was whether the freight of a subsequent voyage was liable to be attached for a B. B. Sir William Scott (afterwards Lord Stowell) decreed the freight to the claimant; desiring however to be understood, as laying down no general rule for all circumstances, and all cases, where any third party may have become interested in the freight of the subsequent voyage. Most writers, as we have seen, have affirmed that this could not be done.

This learned Judge remarked on this occasion, "The disposition of this Court would certainly be to uphold the efficacy of bonds of this nature, as far as is consistent with law. *They are bonds of great sanctity, and highly necessary in mercantile affairs.*"

In 1808 Mr. Annesley pub. *A Compendium of the Law of Marine Ins., Bottomry, etc.* This work is one which the reader may always consult with advantage. We do not however discover anything new on this subject.

In 1824 Mr. Wm. Benecké, of Lloyd's, pub. *A Treatise on the Principles of Indemnity in Marine Ins., Bottomry, and Respondentia; and in the Practical Application of those Principles in Effecting such Contracts, and in the Adjustment of all Claims arising out of them.* The work is regarded as of the very highest authority; and on the subject of B. it is eminently practical, as the following passages will show :

It frequently occurs that the master of a vessel is under the necessity of borrowing money abroad for the purposes of the voyage. If this happens at a place where the owner of the vessel has friends or correspondents, the master applies to them first, and they usually furnish him with the money required, for which they draw bills, including commission and int., either on the owner or on such other house as he may direct. The money thus expended for repairs, for expenses of liberating the ship or the cargo, would be entirely lost, over and above the orig. value of the thing for which it was laid out, if the vessel, etc., happened to be entirely lost on the continuation of the voyage. *To guard against losses of this kind the ins. of money expended, etc., has been introduced.* But if either the correspondents refuse to advance the money, or if it be wanted at a place where the master is not able to raise it upon bills, he is often reduced to the necessity of mortgaging, according to circumstances, either the vessel, or the vessel and cargo, which is called taking money on B.

The lender in B. pays no regard to the personal credit of the borrower, but looks upon the thing hypothecated as his only security. . . .

The necessity for borrowing money on B. may also originate in causes different from that before described. The master may want money in an intermediate port for purposes unconnected with the orig. adventure; or at the place of destination for fitting out his vessel for a new voyage. . . .

Bottomry may be considered as entirely distinct from ins. . . . Yet in the present state of commerce a competent knowledge of the one necessarily includes that of the other. B. is frequently taken either partly or entirely on account of the underwriters, who, therefore, ought to know the nature of this contract. . . .

The following is a point to which the attention of the reader of this paper should be especially drawn :

If we consider the different purposes for which money may be taken on B., we shall soon perceive that this contract is not always founded on the same basis—but that there are different kinds of B., which by their nature ought to be differently treated. Most of the authors, however, who have endeavoured to explain this important subject, *do not make those necessary and highly important distinctions, but speak of B. as if one kind only existed.* The same remark applies to the laws of all maritime nations, which apply the same rules indiscriminately to all kinds of B. The only way of explaining this singular fact is, that the different kinds of B. were not in use at the same time in any country; and that each legislator only had that kind in view which was peculiarly known to him. To this branch he adopted his rules exclusively, and in process of time those rules were indiscriminately applied to B. in general. This alone can account for the astonishing variety in the laws respecting this subject, which are absolutely contradictory to each other. . . .

Under these circumstances the B. transactions could not but remain in a state of great imperfection. This is so much the case that even the best informed and most judicious merchants consider this to be amongst the most difficult and abstruse parts of mercantile knowledge. It is principally owing to this uncertainty and obscurity of laws and principles concerning this branch of bus. that marine int. has arisen to such an enormous height—that B., instead of facilitating navigation and commerce, as it ought to do, is become an intolerable burden to them; for it is but natural that the lender on B., *finding himself subject to be treated in different ways, should contemplate the worst case to which he can possibly be exposed, and stipulate for the prem. accordingly.*

He considers the two main distinctions in the B. loan to be these : 1. Where the money taken on B. is to be used for the benefit of those for whom the loan is contracted, without increasing the orig. value of the thing hypothecated. 2. Where the money taken on B. is used to increase the value of the thing hypothecated. He supports this position by reasoning, of which the following is an abstract : *Every B. concerns either the ship alone, or the ship and cargo together, or the cargo alone. Other cases cannot occur.* Money taken on B. of the *ship* alone at the port of departure by the owners, whether for the completion or victualling of the ship, belongs clearly to the *second* class. Money taken on B. of the *ship* at a port of necessity, for repairs or expenses of claim upon capture, cannot increase the orig. value, and therefore belongs to the *first* class. Money taken on B. of the *ship* at the port of destination, according as it is to be applied to repairs, to victualling, or improving the ship for a new voyage, belongs either to the *first* or the *second* class. Money

taken on B. of *ship* and *cargo* together can only be applied to the common benefit of ship and cargo, and must belong to the *first* class. Money advanced upon a *cargo*, whether made at home or abroad, must clearly belong to the *second* class. Money that might be required to be advanced in a port of necessity, to be applied for sole benefit of the *cargo*, would belong to the *first* class.

In 1828 Mr. F. L. Holt, Q.C., pub. *A System of Shipping and Navigation Laws of Gt. Brit., and of the Laws relative to Merchant Ships and Seamen, and Maritime Contracts*. The author says :

The contract of B. and R. seems to deduce its origin from this necessary authority of the master ; and although this contract has been the subject of very learned investigation in several treatises on the law of maritime ins., it must not altogether be omitted in the present place. But previous to this inquiry, it will be necessary to say a few words on the *form* of the instrument of hypothecation. When the master hypothecates the ship abroad, there is no settled form of contract to use on these occasions ; sometimes an instrument in the form of a bond (then popularly called a B. B.), at other times a bill of sale ; at others instruments of a different kind are employed to hypothecate the vessel. But whatever the nature of the instrument be, it ought to express the *occasion of borrowing* (for example, to repair the ship, to pay Customs duties, etc.), the sum, the prem., the ship, the names of the parties, the voyage, the risks to be borne by the lender, and the subjection of the ship itself as security for the payment of the moneys advanced. We have already observed that this security being *in re*, the lender, by the universal maritime law of Europe, has a right to have recourse to the ship itself for repayment.

The process of recovery is the following :

Upon the arrival, therefore, of the vessel in her home port, if default be made in payment of the money borrowed, the lender may obtain a warrant from the Court of Admiralty to arrest the ship, upon an affidavit of the facts, and may cite all persons interested to appear before the Court. This citation is generally made by posting a copy of the warrant upon some part of the ship. The Court of Admiralty may decree a sale of the ship, and distribute the proceeds to the different claimants ; and the absence and default of the owners will be no impediment to the proceedings of this Court ; for if it were admitted that no decree could be made unless they should appear, a failure of justice would frequently occur. This proceeding *in rem* against the ship itself is the proper and peculiar province of the Court of Admiralty. The Courts of Law have no such power ; their proceedings are entirely personal, and they have no authority to adjudge a delivery of the ship *in specie*.

Mr. David Hughes, in his *Treatise on the Law relating to Ins.*, also pub. 1828, treats of B. and R. We do not discover anything calling for special note.

In the case of *Simonds v. Hodgson*, which was before our Courts in 1832, the facts were these : It was an action on a pol. of ins., and the plaintiff in his declaration alleged his interest to be bottomry, setting out the bond, in which there was the following clause :

I do further bind myself and schooner-brig *Clarence*, her freight and cargo of every kind, to the full and complete payment of the said sum, with all charges thereon, in eight days after my arrival at the afore-mentioned port of Lond. ; and I do hereby make liable the said vessel, her, freight and cargo, whether she do or do not arrive at the port of Lond., in preference to all other claims, until such sum, with £12 p.c. bottomry prem., be paid.

The Court of Common Pleas, upon demurrer, decided that it was not bottomry, and gave judgment for the defendant. The case being brought by writ of error before the Court of King's Bench, the judgment was reversed, and Lord Tenterden said :

We are all satisfied that our judgment must be for the plaintiff. Of course no person can be entitled to the *periculi pretium*, who does not take upon himself the risk of the voyage : but it is not necessary that his doing so shall be declared expressly and in terms, though this is often done. It is sufficient that the fact can be collected from the language of the instrument considered in all its parts. In this case, if the words "instead of 8 days after my arrival," had been "8 days after my ship's arrival," there would have been no doubt that the lender took upon himself the peril of the voyage, if there be not in some part of the instrument some matter denoting a contrary intention. Now the personal arrival of the master, unconnected with the ship, is a matter that cannot be supposed that either party contemplated. It cannot be supposed that the lenders looked to him personally, or to his personal means, nor that he intended to pledge himself personally and absolutely for the payment, without regard to the means by which he might be furnished by the ship and her freight. We, therefore, are of opinion that the words "my arrival" must be understood to mean "my arrival with the ship," or "my ship's arrival." With respect to the words, "I do hereby make liable the said vessel, her freight and cargo, whether she do or do not arrive at the above-mentioned port of Lond.," we think these words were intended to provide only for the ship's arrival in some other than the destined port ; and in such an event to give the lenders a claim on the ship in preference to other claims. It cannot be intended to provide for the case of the loss of the ship, because, in that event, there would be nothing on which a pledge could operate, or a preference be claimed.

In 1841 Mr. James Reddie pub. *An Historical View of the Law of Maritime Commerce* ; wherein he expressed a very confident opinion that the practice of advances upon B. and R. led to the invention of marine ins. in the present sense. He is of opinion that it was to the want of accumulated cap. in the hands of individual shipowners and merchants, combined with the perils to which their maritime commerce was exposed, which chiefly led to the prevalence among the *Greeks* of *Fœnus nauticum*, B., and R. "In the practical exercise of this contract the *theory of maritime risks* came to be pretty extensively unfolded, as it was a species of investment or adventure very frequently resorted to by fathers of families, who had thereby the chance of reaping large profits." The *Romans* studied the practices of the *Greeks*, and adapted them to their own requirements. "That the *Romans* should have been so well acquainted with a contract so nearly allied to *marine ins.*, and yet should not have practised the latter contract itself, is rather difficult to be accounted for."

In 1845 Mr. Francis Hildyard pub. *A Treatise on the Principles of the Law of Marine Ins.* ; in which he briefly treats of B. and R.

In 1848 Sir Joseph Arnould pub. his *Treatise on Marine Ins.* The work is one of high authority. It treats but incidentally of our present subject. "Loans on B. and R., though themselves a species of ins., may yet be the subjects of ins., inasmuch as they are an interest exposed to risk from the perils of the sea. The lender alone, from the nature of the contract, can ins. the sum advanced."

In 1851 Mr. Frederick Hendriks contributed to the *Assu. Mag.* some most excellent papers, *Contributions to the Hist. of Ins.*, etc., which must have opened the eyes of many students to the fact that ins. had a hist., and a very instructive and remarkable one too. In the pursuit of his subject he was naturally led up to the question whether ins. was practised by the nations of antiquity; and hence he came upon B. contracts and R. loans. He carefully reviewed the whole question; and finally, after comparing the B. contract of the Greeks with that now in use, sums up as follows:

The similarity throughout in the nature and principles of the preceding ancient and modern forms of contract is too obvious to require a recapitulation of their particulars. All that our present inquiry will require is that we should put the question to ourselves, whether under these circumstances the ancients had ordinary need of any other form of ins. On every consideration, does not the contract which they made use of seem completely suitable to the wants of their commerce? To the borrower or assured it supplied a trading capital, and a pol. of assu. without doubt or danger, as the sum assu. was in his own hands, exigible in the event of a fair claim arising. To the lender or assurer it gave—as has been before remarked—a profitable investment, over which mercantile usage, if not statute law, afforded proper control, by public registry of the transactions, power to appoint a supercargo, and strict enforcement of other stipulations in his favour. I think it will be agreed that the pecuniary terms of such contracts could not have offered an impediment to their habitual use by the merchant of those days. The prem. (as we here term the profit beyond the ordinary rate of int.) was computed according to the time occupied by the journey; and in the Justinian Code this *extra rate* on nautical risk was limited to 6 p.c. p.a. above the ordinary rate on loan. Before the promulgation of that Code the nautical interest was unlimited, as in Greece; and although the terms in the example from Demosthenes may at first sight appear comparatively high, it will not be so when viewed with reference to the very high ordinary rate of int. which prevailed at the period in Athens. The prem. system of marine ins. could hardly have been desirable for any reason, when the merchant could habitually obtain advances in the above form on nautical interest; for even assuming that his capital was large, and that the loan was consequently a burden, there was the ancient method of banking to relieve him; and he could re-invest its amount with the *Argentarius*, who allowed interest on the deposit at the common rate—thus reducing the merchant's or skipper's outlay to the bare differential interest or premium of insurance.

In 1852 Mr. W. S. Lindsay pub. *Our Navigation and Mercantile Marine Laws; considered with a View to their Revision and Consolidation*, etc. The author, and he was a man of wide experience, said:

It is highly desirable that the whole law on this subject should be re-adjusted and simplified. At present so many difficulties are thrown in the way of the recovery of his debt by a party lending on B., in consequence of the most unnatural or improper jealousy with regard to those hypothecations felt by the Judges of our Admiralty Court, whose duty it is to take cognizance of them, that, as a general rule, it is not easy for a master to obtain advances on such security, except at the most exorbitant rates of prem.

In 1853 Messrs. Maude and Pollock, Barristers-at-Law, pub. *A Compendium of the Law of Merchant Shipping*, etc. In the chapter on "Hypothecation" will be found some very useful information on B. and R.; with reference to some of the then latest cases: Where a Brit. ship [the *Gauntlet*] was carried into a foreign port in the possession and under the control of a mutinous crew, and expenses were incurred by a person employed by the Brit. Vice-Consul to investigate into the mutiny and restore the master to his command, the Court of Admiralty supported a B. B. given by the master to cover these expenses. . . .

In the case of *Stainback v. Shephard*, which was determined in 1853, it was decided, that as the master has no authority to hypothecate the ship, unless the payment be made to depend on the safe arrival of the ship, *that the holder of a bottomry bond, not containing that condition, has no insurable interest.*

It is provided by most of the Ins. Ordin. that the master of a ship shall not take up money on B. in places where the owners dwell, unless he is a part owner, and in that case he may take up so much only as his part will answer in the said ship. If he exceeds that, his own estate shall stand liable to make satisfaction. It has been more recently held that *if communication could have been had with the owner by telegraph, a B. B. given in the absence of such communication is void.*

In the *General Conditions of Marine Ins.*, 1867, based upon the German General Mercantile Law, "and adopted as the result of the deliberations of competent persons in the North German seaports," an authorized translation of which into English was pub. in 1868 by the Hamburg Chamber of Commerce, we find the following regarding B.:

26. Moneys advanced on B. may be ins. on account of the B. creditor together with the B. prem., but not including the prem. of ins. In case of an ins. on B. moneys, should it not have been mentioned what objects are bottomried, it should be considered that the B. advances are ins. upon ship, freight, and cargo. If the whole of these objects have not actually been bottomried, the assured may only claim against the underwriter, so far as, even with the addition of the objects not included in the B. B., the B. claim would not have been covered. The assured shall produce evidence on this point.

41. When in case of an ins. on B., it is not notified that the same is given upon a ship in ballast, or that the B. B. has been signed on account of an old debt having arisen before the commencement of the insured voyage, then the ins. is void against the underwriters, and the prem. forfeited.

112. A total loss with regard to B. or average-money occurs when the objects which have been bottomried, or for which average-money has been advanced or expended, have been subjected either

to total loss or to other incidents in such a degree that, in consequence of injuries, hypothecations, or other liabilities thereby occasioned, nothing has been left to cover such money.

139. In case of partial loss on B. and on average-money the damage consists of the deficiency resulting from the fact that the object bottomried, or upon which average-money has been advanced or expended, may from subsequent accidents have become insufficient to cover the B. or the average-money.

We regard these general conditions as of the highest practical value.

When a master or owner of a ship takes up money on B., and buys in lading, but endeavours to defraud the Prince or State of their customs, or puts such goods on board as incur the forfeiture of the ship, in such case the *borrower* alone runs the hazard—not the *lender*. And where bonds or bills of B. are sealed, and the money is paid, if the ship receives injury by storm, fire, enemy, or any other accident, before the commencement of the voyage, then the person borrowing shall alone run the hazard, unless it be otherwise provided by the special wording of the contract, to the effect that it was to begin from the date of sealing. But if the conditions be that the ship shall sail from Lond. to a port abroad, and shall not arrive there, etc., then, etc., the contingency begins not until the departure.

The contract both as to Bottomry and Respondentia loans *must always be in writing*. The deed, or instrument, is sometimes made in the form of a deed-poll, called a *Bill of Bottomry*; sometimes in the form of a bond or obligation, with a penalty, called a *Bottomry Bond*. It seems to us that inasmuch as the ship alone is liable under the loan of Bottomry, properly so called, a bond should *never be required or given*. In a loan on Respondentia the case is different, for the advance being upon the goods and merchandize, it may well be required of the captain that if he dispose of or reduce these from any cause, he shall either replace them, or be answerable for the consequences. It is quite certain that any *personal* undertaking to repay the advance would have brought the transaction within the Usury Laws while they were in force. And in some parts of the world, including the U.S., they still remain in force.

Whatever the *form* of the instrument of security given, it must contain the names of the lender and the borrower; those of the ship, and the master; the sum lent, and the stipulated int.; the voyage proposed, with the time of commencement, and the duration of the risk which the lender is to run. It must show whether the money be lent upon the ship or among the goods on board, or on both. Indeed, all the stipulations of the contract must be distinctly and clearly shown. The form varies slightly with local circumstances and customs. Those already given in this art. show sufficiently, in the light of the above requirements, the nature of the document.

The law-books abound with cases arising under contracts of B. and R.; and additional points from time to time yet arise. The cases we have quoted are intended to give the reader a comprehensive grasp of the subject; but it must be remembered that this is not a work on practical law, brought down to the latest date. [FÆNUS NAUTICUM.] [PECUNIA TRAJECTITIA.] [RESPONDENTIA.] [USURA MARITIMA.]

BOTTOMRY, BILL OF, is a contract between two persons, the one borrowing and the other lending a sum of money, by which the borrower, setting forth his intention to make a voyage in a certain ship therein named, acknowledges the receipt of a certain sum of money from the lender on this condition: that if the ship does happily perform her voyage without any disaster by enemies or otherwise, then he is to restore that sum to the lender, with an add. sum therein expressed for the int. within a certain time after his return; but that if the ship be lost, or taken by enemies or pirates, then the person of the borrower to be for ever discharged, and the lender to bear the loss. See obs. on the form of contract in the preceding art., and also the forms of B. Bills there given.

BOTTOMRY BOND [short B. B.].—The legal instrument usually designated a Bottomry Bond hardly warrants that designation, for reasons stated at the close of our art on BOTTOMRY. A BOTTOMRY BILL appears the more correct designation. [RESPONDENTIA.]

BOTTOMRY PREMIUM—A high rate of int. charged on the safety of a ship, the lender losing his whole money if she be lost.—*Smyth*. We have discussed the incidents of this prem. in the preceding art. on BOTTOMRY.

BOUCHER, GEORGE, head of Country Department in *Atlas*, in which Co. he has held various positions of trust and responsibility for more than half a century—having entered the office in 1820. He is a type of the old school of officials, whose like we shall never see again.

BOUCHER, MONS. P. B., pub. in Paris in 1808, *Consulat de la Mer, ou Pandectes du Droit Commercial et Maritime*, a work bearing upon marine ins. This work, which never enjoyed any reputation, has been entirely set aside by that of Pardessus.—*McCulloch*.

BOUGHT AND SOLD NOTES.—The practice of licensed brokers is to keep books wherein they enter the terms of any contract they effect, and the names of the parties. In cases of loss by fire these books become important mediums of evidence.

BOULAY-PATY, MONS. P. S., pub. at Rennes, 1821–23, *Cours de droit Commercial Maritime d'après les principes et suivant l'ordre du Code de Commerce*; or the Law of the Commercial Marine. A work of very considerable merit and learning, and which we have had occasion to quote in these pages. Another ed. was pub. in Paris in 1834; he also edited an ed. of *Emerigon*, which was pub. at Rennes in 1827.

BOULT, SWINTON, Man.-Director of *Liverpool, Lond., and Globe*, which we believe may

be correctly designated the largest F. Ins. Co. in the world. We have, after some years of obs., come to regard Mr. Boulton as the very Napoleon of F. Ins. He commenced ins. bus. in 1831, being then associated with Mr. Geo. Booth in agencies in Liverpool for the *Albion L.* and *Protector F.* offices. In 1834 the last-named Co. closed most of its Liverpool agencies, and soon afterwards disappeared from the scene. Mr. Boulton then became agent to the *Lond. Assu. Corp.*; but in 1836 occurred the event which has shaped his subsequent course of life: he founded the *Liverpool F. and L. Ins. Co.* This Co., in 1848, assumed its better known name of the *Liverpool and Lond.*; and finally, in 1864, became the world-wide *Liverpool, London, and Globe.*

Mr. Boulton became the Sec. of his new Co. The only feature of his early management which it seems necessary to note, is that it was entirely free from all push and dash. He has been often heard to say that up to 1844 the Co. did not possess 20 working agents. We think we can fathom his policy in this. Liverpool had not, at that date, been a successful field for F. ins. enterprise. The experience of Lond. as well as provincial offices had been alike disastrous. So well was this fact known, that when he founded his Co. the press assailed him for inviting subs. to an enterprise which could but fail; as indeed two previous Liverpool offices had failed. Mr. Boulton determined to feel his way quietly—he was nursing a young giant; *and he knew it.*

The years 1842-3 are celebrated in the annals of Liverpool for the number and destructiveness of their fires. The shareholders in the infant Co. were threatened with ruin. Friends urged them to sell out. Rival offices, or their agents, with a natural instinct, fanned the flame of discontent. But these latter were inconsistent: for they continued to seek new bus. for their branches and agencies—thus endeavouring to extend their hold upon this same Liverpool bus. which they, in the hope of exterminating a rival, so loudly decried. There can be no doubt that the fate of the Co. hung upon the balance.

It was at this juncture that the character of the man at the helm became manifest. It has never been determined, even by our most able historians, whether great men cause great events, or great events produce great men. We are disposed to think the events, and the men, act and re-act upon each other. The result in this particular instance was that the young Sec. determined for himself a course of action. He resolved to apply himself—(1) *To ascertain the causes of the fires in Liverpool*; (2) *To secure their diminution.* It was this inquiry which enabled him to embody in a report the germs of those provisions, which were afterwards embodied in the *Liverpool Fire Prevention Act*—and which Act has proved of much advantage to the town, and the entire commercial community.

It must not be supposed that these measures were perfected without a struggle with those competitors who now discerned the supremacy which the successful solution of some of the difficulties here involved would afford to the now rising Co. Yet were not these measures for the common good? The *North British Co.* threw in the weight of its influence with the local Co. The other offices, in the end, followed. The victory on his own ground gave Mr. Boulton an influence which he has never ceased to exercise for the common good. Let us try and recount a few instances, viz.: The introduction of a tariff, based upon the principle of rating improved risks in the degree of their improvement. The application of a tariff to cotton mills, based upon the principle of the “numbers spun,” i.e. the degree of fineness of the threads produced—a principle maintained to the present day. In the preparation of this last tariff we have heard Mr. Boulton say that he was materially assisted by his then Manchester agents, Messrs. Ewart and Co. From this period the present tariff system takes its date. [TARIFF.]

Again, Mr. Boulton was the originator of the Liverpool Salvage Committee. This was the first combination of the kind ever introduced, and its success has been most marked in the services it has rendered to the F. ins. cos. [SALVAGE, FIRE.]

The division of the country into districts, and the appointment of a committee of the offices to take charge of the tariffs in each district, originated with Mr. Boulton. He was elected Chairman of the Northern Committee, which position we believe he still occupies. It has been more particularly in connexion with these committees that his wonderful practical knowledge of the details of the bus. of F. ins. has made itself most impressively known.

One of his more recent services has been the securing the introduction of a *uniform fire pol.* for the tariff offices. This was certainly equally required in fire as in marine ins., where it has proved of the very first importance. Such a change takes time to develop into perfect working. We trust Mr. Boulton will nurse this project until that state of things has been accomplished.

Having followed Mr. Boulton through those labours which have conduced to the common good of all F. offices ins. mercantile risks, we now return to note his operations regarding his own Co. He had made himself master of all the more important details of home F. bus.; but the necessities of Brit. commerce carry Brit. F. offices into risks located in other climes. These wider fields of enterprise came within the grasp of Mr. Boulton's ambition. He made the circuit of the globe—we do not mean the *Globe* he afterwards conquered; he applied his practical experience to the altered circumstances of the varying countries; and there is not at the present moment any one spot on this planet wherein

the interests of commerce have become predominate, in which either his own name, or the name of his Co., and more prob. both, are not known—and respected, or feared, as the case may be.

Mr. Boulton at one period became the champion of amalg. in F. ins. offices; and carried out various combinations of this character on a grander scale than any before or since. Some of his compeers voted him a little mad upon this point at the time. We ventured then, as now, to assert that his madness had a method in it. We shall speak more in detail of these combinations in our hist. of the Co. We here deal with the motive power only—the man. It is enough now to add that whereas the first year's income of the Co. did not exceed £10,000, the last year's income [1871] from F. prems. alone was about £1,250,000! And although fully one half of this princely sum was required to meet the loss resulting from one single casualty—the *Chicago fire*—yet no other loss remained delayed one single hour in consequence. The Co. nobly sustains the shock. Its founder stands serene at the helm.

Mr. Boulton has of late years expressed himself as strongly opposed to the system of re-insurance in F. bus. His argument is that no office should take more on any one risk or combination of risks than it means to retain. Are not others coming round to the same view?

Mr. Boulton has pub. various pamph. and papers on subjects connected with joint-stock cos., political economy, currency, and ins. It is only the latter we can here notice. He has also given evidence before various Parl. Committees—notably that of 1867, on *Fire Protection*, on which occasion many of his statements were so important that we propose to give a brief synopsis of them here; and to recur to more specific points of the evidence under various heads hereafter. The sledge-hammer style of delivery, occasionally toned down by a characteristic sarcasm, cannot be entirely reproduced on paper.

He handed to this Committee certain statistical tables regarding fires in Lond. [LOND., FIRES IN.] The increase of fires returned as *suspicious*, *doubtful*, or *unaccounted for*, was, he said, no less than 14 p.c. between the years 1863 and 1865. Jute fires took place in Lond.; cotton fires in *Liverpool*. Many of such fires were the result of incendiarism, to conceal theft. In the *Liverpool* warehouses the carrying of lucifer-matches, or pipes, was strictly forbidden. Two policemen had then recently taken from the men no less than 590 pipes. He did not attach so much importance to the practice of smoking. He thought a *Fire-Marshal* would be the best officer to conduct inquiries regarding the origin of fires. He (the Marshal) should attend all fires personally. Then the following dialogue ensued:

Do you think that ins. cos. are as careful as they ought to be in taking risks? It does not do for a man to sit in judgment upon his neighbours, but we are as careful as we can be.—What commission do the cos. offer to the agents? That is a very difficult question to answer. It varies from something like 7½ p.c. up to 25 or 30 p.c.—Now do you think when an office allows an agent to get 25 p.c. that they hold out an inducement for him to take any risk that comes in his way? I should say a very strong inducement.—Looking at all these things together, do not the cos. offer a great many temptations to raising fire? I do not hesitate to admit that the cos. have to thank themselves for a great part of the evil they have suffered from of late years.—The cos. are much disinclined to prosecute, are they not? Some are. We feel that we have scarcely a fair chance. There have been more prosecutions within the last 12 or 18 months on the part of the offices than I have known for a long period.—Then seeing that the cos. are so careless in taking risks, and that it is the interest of the agent to take anything, what would you recommend us to do with such a class of men? You must leave the cos. to take care of themselves. You have to legislate for the public, and you can do nothing more effective than instituting an inquiry for the purpose of stopping fires. There has been so large an infusion of fires which are not accidental, which are wilful fires beyond all question, that it is impossible for the prems. to meet those cases.—Are you not aware of cases in which goods under the Customs lock and key have been stolen? I am aware of cases where whole cellars have been emptied of goods under the Customs lock and key.

Regarding the difficulties of the offices in getting a proper prem. for mercantile risks, Mr. Boulton said, “We have heard something of compound householders lately, and we have compound directors: merchants who are sometimes directors of ins. cos. and dock cos. as well.” The point of these answers was well understood by those most interested.

In 1870 Mr. Boulton pub. *Obs. on a Bill to Amend the Law relating to Life Assu. Cos.* He expressed himself opposed to any new legislation in this direction. He considered that the past legislation was responsible for many of the evils which had occurred—a view concurred in by many.

In 1865, after 30 years of most assiduous service to his Co., Mr. Boulton was elected, by the voice of his associates, to the proud position of Man.-Director. We wish him long life, and health and strength in his labours. Will not the entire ins. community on either side of the Atlantic gladly exclaim, Amen and Amen?

BOURNE, THOMAS, Man. of *National Guardian* (No. 2) from its commencement in 1865.

He was Sec. of *New National* from 1854 to 1864.

BOWMAN, JOHN, was Sec. *Life Association of Scotland*, for some years preceding 1850, when he retired from ins. bus.

BOWRING, SIR JOHN, while Plenipotentiary of Gt. Brit. at Hongkong in 1855, addressed a letter to our Reg.-Gen. on *The Pop. of China*, containing some facts of great interest, which we shall mention under CHINA, and POPULATION.

BOWS OF A SHIP.—The two sides of the fore extremity of a vessel; as the starboard and larboard bows.

BOWSER, ALFRED T., Sec. of *Whittington* since 1865, was trained to the bus. in the *Atlas*, which office he entered in 1834. In 1847 he became Sec. of the *Legal and Commercial Fire*—we believe the first of the modern offices which took its stand upon the non-Tariff plan. In 1854 he became Sec. of Lond. branch of *Leeds and Yorkshire*, remaining with that Co. up to date of its absorption by *Liverpool, London and Globe*; and indeed for some months afterwards to wind up its affairs. Mr. Bowser was the author some years since of a little pamp.: *Conversations on Life Assu.*—one of the earliest efforts to popularize the subject; and some few years since he took part in an instructive correspondence in the *Ins. Record* on the “average clause.”

BOWSER, WILFRED A., son of the preceding, Act. and Sec. of *Lond. and County Prov. Inst.*, of which he was the founder. Was trained to ins. bus. in the *Whittington*: afterwards for several years in the *Queen*. In 1867 he became Chief Life Clerk in the *English*, and remained with that Co. until the trans. of its business in 1870. In 1872 he read a paper before the Inst. of Act.: *Obs. on the rate of Mort. in Infancy and Childhood*; and the same is printed in the *Assu. Mag.* [v. 17, p. 267]. The paper brings together a large number of facts of a very interesting character, and is a most creditable production. We expect to have to repeat Mr. Bowser's name in connexion with other subjects.

BOX SOCIETIES.—A species of Friendly So., prevailing during the last century, and of the constitution of which (about 1728) some leading points were as follows:—Members met weekly at an appointed place—generally some favourite inn—and were expected to spend 3*d.* at each meeting and to put 2*d.* into a *box*—hence the name. A fine was imposed in case of omission. Those who had contributed to the so. for one complete year were entitled in case of sickness, lameness, or blindness, to receive 7*s.* per week during six months, and half that amount after, should their illness continue. On the death of a full member, an allowance of 40*s.* was made out of the box towards his burial; his fellows being expected to attend the funeral, unless they were “hindered by sickness, lameness, blindness, or being in prison,” and were to contribute 1*s.* per head to be handed to his wife or nominee. The ages of admission were from 21 to 41. The regulations of these sos. as to the preservation of decency and good fellowship among the members and the salaries of officers would bear comparison favourably with some of our modern sos.

In 1793 was pub. by Strap Bodkin, staymaker (apparently an assumed name), *An Address to the Members of the various Box Clubs and Benefit Societies in Gt. Britain*.

BOYD, B. AND M., were “Resident Managers” of the *North British* in Lond. from the estab. of that agency down to 1845.

BOYD, E. L., was Resident Director of the *United Kingdom L.*, from 1846 down to its union with the *North British* in 1862.

BOYD, GEORGE, JUN., Sec. of *Union Marine*, Dundee, from 1849 to 1859.

BRABROOK, EDWARD W., Barrister-at-Law, Assistant Registrar of Friendly Societies since 1869. Mr. Brabrook was for many years the associate of Mr. Arthur Scratchley in his actuarial and literary labours; and we believe we shall not be doing injustice to either of these gentlemen in stating that many of the notes on legal subjects scattered through the works of the latter were contributed by the former. In 1863 he contributed to the *Assu. Mag.* a letter *On the Assu. of Invalid Lives*. In 1868 Mr. Brabrook appeared as one of the promoters of the *General Accident and Guar. Co.* In 1869 he pub. *The Law Relating to Industrial and Provident Societies (including the Winding-up Clauses), with a Practical Intro., Notes, and Model Rules; to which are added the Law of France on the same subject, and remarks on Trade Unions*. A very carefully prepared and practical work.

BRADBROOKE, R., in 1861 invented a smoke and noxious vapour respirator, by means of which, it was asserted, a person could enter a building, however dense the smoke or vapour might be. It was intended for the use of firemen in the execution of their duties.

BRADFORD MUTUAL MARINE INS. CO. (UNLIMITED), founded at Bradford, in Yorkshire, in 1869, with unlimited liability. The object of the asso. was “To insure all goods belonging to members consigned from Hamburg, Kingston-upon-Hull, London, Liverpool, Londonderry, Cork, or any other place on the east coast of Ireland, between Londonderry and Cork to Bradford, or from Bradford to above-mentioned places.” We do not know what success it has met with.

BRADFORD AND WEST YORKSHIRE F. AND L. INS. CO.—This Co. was projected in 1845, but appears to have died in the promoters' hands. The proposed cap. was £500,000, in shares of £50.

BRAID, WILLIAM, of *Scottish National*, constructed some Tables of Single and Annual Prem. for Joint Life Ins. for all ages between 15 and 60, deduced from the *Carlisle T.* of Mort., int. 3 p.c. These tables will be found in *Assu. Mag.* [vol. v., p. 363, 1855]. We believe they have never been pub. separately.

He has also constructed a series of tables for determining the values of annuities and assu. on *three lives*, according to the *Carlisle T.*, and showing the values of the annuities payable during the joint lives, int. 3 p.c. These tables are also given in the *Assu. Mag.* [vol. vi., pp. 115–120].

BRAIDWOOD FIRE INS. CO.—This project was set on foot in 1861, by Mr. Edward Brooks, Accountant, Gresham House, a very few weeks after the melancholy death of poor Braidwood. It was not carried forward.

BRAIDWOOD, JAMES, late Chief Superintendent of the Lond. Fire Engine Estab., and previously Master of Fire Engines in Edinburgh. In 1831 he pub. in Edin. a work—*On the Construction of Fire Engines and Apparatus, the Training of Firemen, and the method of Proceeding in Cases of Fire*. We believe that this was the first book which had been written on those subjects ; and it was of a highly practical character.

On the 1st Jan. 1833 the late LOND. FIRE ENGINE ESTAB. was inaugurated ; and Mr. Braidwood was selected for its chief. How ably he performed his duties until death overtook him in their execution at the great Tooley-street fire, on 22 June, 1861, will be in the remembrance of many of our readers. He held the position for 28½ years, and most of the arrangements for promoting the efficiency of the service during that period were due to his knowledge and foresight. We shall have occasion to refer to these matters more in detail when we give the hist. of that estab. ; and also under FIRE PROTECTION.

In 1850 Mr. Samuel Brown contributed to the *Assu. Mag.* [vol. i., p. 31] a paper on *Fires in Lond.*, and therein he speaks of the fire brigade, "whose extraordinary efficiency under the training and superintendence of Mr. Braidwood, have frequently saved from loss an enormous amount of property, which seemed destined to be the inevitable prey of the flames." He continues :

The skill and intrepidity of the chief, and the exertions of the men, have preserved this great city from calamities which in such a mass of buildings, occupied by many hazardous trades, in some cases full of combustible materials, and in some parts of the city exposed from age and nature of construction to the most fearful conflagration, if a fire once begins, it is most surprising that we should so long continue to escape.

Sitting, as the present writer did, for several years on the Committee of the L. F. E. Estab., he knows what great anxiety was often expressed by the Superintendent as to the consequences to the ins. offices—who then alone supported that Estab.—in the event of any fire once extending beyond the control of the staff and appliances at his command. It was mainly in consequence of these fears, and his perception of the serious character of the Tooley-street conflagration, that he fell a victim to his noble zeal and devotion on that occasion. It was this conviction which induced the managers of nearly all the Lond. F. Ins. offices to attend his funeral at Abney Park Cemetery.

Mr. Braidwood was calm, yet quick ; able, yet unpretending ; practical, yet unassuming. He was a hero in his walk in life, and was so regarded by his staff. He was 62 years of age at his death.

BRAIN DISEASE (Class LOCAL ; Order, Disease of *Nervous System*).—The deaths returned in England under the general head of brain disease, etc., should, if registration could be made perfect, be placed under one of the scientific heads embraced under the order of disease of nervous system. Those so omitted to be classed vary but very little year by year. In ten consecutive years they were as follows :—1858, 4454 ; 1859, 4586 ; 1860, 4865 ; 1861, 5105 ; 1862, 4927 ; 1863, 4876 ; 1864, 5159 ; 1865, 5321 ; 1866, 5605 ; 1867, 5671. The average over a period of fifteen years ending 1864 was 217 to each million of the pop. living.

The deaths in 1867 were :—Males, 3255 ; females, 2416. Of the males 435 died under 5 ; 114 between 5 and 10 ; 86 between 10 and 15 ; 99 between 15 and 20 ; 82 between 20 and 25 ; 203 between 25 and 35 ; 325 between 35 and 45 ; 438 between 45 and 55 ; 568 between 55 and 65 ; 612 between 65 and 75 ; 260 between 75 and 85 ; 33 between 85 and 95 ; and 1 over 95. Of the females, 374 died under 5 ; 96 between 5 and 10 ; 78 between 10 and 15 ; 81 between 15 and 20 ; 70 between 20 and 25 ; 185 between 25 and 35 ; 239 between 35 and 45 ; 321 between 45 and 55 ; 389 between 55 and 65 ; 351 between 65 and 75 ; 205 between 75 and 85 ; and 25 between 85 and 95.

Glancing at the mort. by all diseases of the brain and nervous system, including cephalitis, apoplexy, paralysis, insanity, chorea, epilepsy, convulsions, and other brain diseases not distinguished, it appears that the mort. in E. and W. to 1,000,000 of pop. has increased from 2705 in 1857, to 2912 in 1866. It is remarkable that the mort. from apoplexy and paralysis respectively has from the first been very nearly in equal proportions to 1,000,000 persons living, the proportion from apoplexy being 439 in 1857 and 490 in 1866, that from paralysis being 457 in 1857 and 500 in 1866. These two diseases are incidental to old people. The number of deaths from cephalitis (inflammation of the brain) p. 1,000,000 persons living had increased from 178 in 1857 to 197 in 1866. The deaths from insanity—21 per 1,000,000 of pop. in 1857, and 31 in 1866—do not indicate the number of deaths of persons in a state of insanity ; large numbers of maniacs die of consumption and other diseases, and consequently appear under other heads. The increase in the mort. from convulsions in the ten years is considerable, the proportional number of deaths to 1,000,000 living being 1286 in 1857 and 1306 in 1866. The convulsive form of disease affects infancy and youth. Of the rare and remarkable disease, chorea (dancing mania), the proportional number of deaths to 1,000,000 of pop. was only 2 in 1857, and 3 in 1866. From epilepsy, to 1,000,000 living there were 115 deaths in 1857, and 118 in 1866 ; and from other brain diseases undistinguished, 207 in 1857, and 267 in 1866. The actual numbers of deaths regis. in E. and W. from diseases of the brain and nervous system in the years 1857 and 1866 respectively were 51,619 and 61,164—viz., cephalitis, 3392 and 4146 ; apoplexy, 8378 and 10,297 ; paralysis, 8714 and 10,504 ; insanity, 403 and 650 ; chorea, 44 and 63 ; epilepsy, 2193 and 2468 ; convulsions,

24,532 and 27,431; brain diseases undistinguished, 3963 and 5605. This class of diseases constituted a proportion, in the year 1866, of 1233·9 deaths to every 10,000 of the deaths from all causes—viz., cephalitis, 83·6; apoplexy, 207·7; paralysis, 211·9; insanity, 13·1 chorea, 1·3; epilepsy, 49·8; convulsions, 553·4; and other brain diseases, 113·1.

Among brain diseases, necrencephalus, or softening of the brain, has of late years rapidly increased. In the ten years 1857–66, 11,685 deaths were registered in E. and W. from this cause—7168 males, and 4517 females. In the first five years, 1857–61, the average annual deaths were 894; whereas in the second period of five years 1862–1866, the deaths averaged 1443 annually. In 1857 the number of persons who died from softening of the brain was 775. In 1866 the number was 1664, of which 78 were under 20 years of age; 191, 25 and under 45; 457, 45 and under 65; 424, 65 and under 75; and ten were aged 75 and upwards. In 1867 the deaths were 1810, of which 1132 were males, and 678 females. The ages at death were about the same as in 1866.

BRAITHWAITE, J., was Gen. Man. of the *Progress Ins. Co.* during its short career, 1867–8.

BRAKENRIDGE, REV. WM., D.D., F.R.S., addressed, in 1755, a letter to the President of the Royal So., *Concerning the Method of Constructing a T. for the Prob. of Life at Lond.* The same was pub. in *Phil. Trans.* that year. In 1756 he addressed another letter to the same So., in which he estimates the number of houses in England; and the same is pub. in the *Trans.* for that year. In 1757 he made a further communication on the number of houses in Lond. and Middlesex.—See *Phil. Trans.*, vol. 50. [HOUSES.] [POPULATION.]

BRAMAH, JOSEPH, described as “of Piccadilly, Lond., Engine Maker,” in 1785 obtained a patent for a “hydrostatical machine upon a new construction.” It applied to pumps and fire engines. In 1793 he patented “several improvements and additions to a fire engine made by me.” Some of Bramah’s engines are still in use in Lond. [FIRE ENGINES.]

BRANCH PIPES.—A metal pipe, several feet in length, fastened on the end of the hose, and used for directing the water from the fire engine upon the fire. Its invention is prob. coeval with that of fire engines. In 1863 Mr. Lewis Becker applied a stopcock to the branch, for use in the interior of a building, which is said to be a great improvement.

BRAND, CHARLES, late Registrar of the *Amicable So.*, pub., in 1775, *A Treatise on Assu. and Annu. on Lives, with several objections against Dr. Price’s Obs. on the Amicable So. and Others. To which is added, a Short, Easy, and more Concise Method of Calculating the Value of Annu. and Assu. on Lives, than any heretofore pub.* This work was reviewed in *The Critical Review* for the same year, and in that review, in 1776, appeared, *A Letter written by this Author in Defence and Explanation of his Work and Principle.*

In 1778 he prepared for the So. its Mort. “Experience” from the commencement of the So.—a most valuable document.—See AMICABLE SO. EXPERIENCE TABLES.

In 1780 he edited an ed. of *Smart’s Tables*, “Now revised, enlarged, and improved, by Charles Brand; to which is added an appendix containing some obs. on the General Prob. of Life.”

BRANDENBURG, T. OF MORT. FOR.—In the last ed. of Sussmilch’s *Gotliche Ordnung*, pub. 1775, is contained a T. of Mort., “showing the prob. of the duration of human life at all ages in a kingdom at large; deduced from obs. in the Kurmark of Brandenburg, and formed on the supposition that a *third* of the kingdom consists of inhabitants of towns, and two-thirds of the inhabitants of country parishes and villages.” Dr. Price included this in his 4th and 5th eds. of *Reversionary Payments*, etc. The obs. had been made by Sussmilch upon 1000 children born; but in these were included 42 stillborn, which Dr. Price eliminated. He added the column of “Expectations.” The following is the T. as given by Dr. Price:

BRANDENBURG, DUCHY OF, MORT. T. FOR.—*Sussmilch.*

Age.	Living.	Dying.	Dying Ann. 1 in	Expectations	Age.	Living.	Dying.	Dying Ann. 1 in	Expectations
0	958	199	4 $\frac{1}{2}$	30·68	14	531	4	133	38·64
1	759	70	11		15	527	4	132	
2	689	38	18		16	523	4	131	
3	651	26	25		17	519	4	130	
4	625	22	28		18	515	4	129	
5	603	19	32	42·93	19	511	4	128	34·52
6	584	14	42		20	507	5	101	
7	570	10	57		21	502	5	100	
8	560	8	70		22	497	5	99	
9	552	5	110		23	492	5	98	
10	547	4	137	42·14	24	487	5	97	31·76
11	543	4	136		25	482	6	80	
12	539	4	135		26	476	6	79	
13	535	4	134		27	470	6	78	

Age.	Living.	Dying.	Dying Ann. 1 in	Expectations	Age.	Living.	Dying.	Dying Ann. 1 in	Expectations
28	464	6	77		62	201	11	18	
29	458	6	76		63	190	11	17	
30	452	6	75	28.70	64	179	11	16	
31	446	6	74		65	168	11	15	9.15
32	440	6	73		66	157	11	14	
33	434	6	72		67	146	11	13	
34	428	6	71		68	135	11	12	
35	422	7	60	25.56	69	124	11	11	
36	415	7	59		70	113	10	11	7.48
37	408	7	58		71	103	10	10	
38	401	7	57		72	93	10	9	
39	394	7	56		73	83	10	8	
40	387	7	55	22.65	74	73	9	8	
41	380	7	54		75	64	8	8	6.17
42	373	7	53		76	56	7	8	
43	366	7	52		77	49	6	8	
44	359	7	51		78	43	6	7	
45	352	7	50	19.65	79	37	5	7	
46	345	7	49		80	32	5	6	5.06
47	338	7	48		81	27	4	7	
48	331	7	47		82	23	4	6	
49	324	7	46		83	19	3	6	
50	317	8	40	16.55	84	16	3	5	
51	309	8	39		85	13	2	6	4.18
52	301	8	38		86	11	2	5	
53	293	9	32		87	9	2	4	
54	284	9	31		88	7	1	7	
55	275	10	27	13.68	89	6	1	6	
56	265	10	26		90	5	1	5	
57	255	10	25		91	4	1	4	
58	245	11	22		93	3	1		
59	234	11	21		95	2	1		
60	223	11	20	11.28	100	1	1		
61	212	11	19						

Dr. Price says :

This T., it should be further observed, has been formed without any regard to the correction explained in the 4th essay in the former vol. of this work [*Rev. Payments*]; and on this account (as far as it has been deduced from the numbers dying at every age in the *towns* of Brandenburg) makes the prob. of living too high in the first stages of life. But it should be likewise attended to that on *another* account, it makes them in a much greater proportion too low. I mean on account of the great excess of the births above the burials in the country parishes and villages.

BRAZIL.—The pop. in 1856 was 7,677,800, and its density per square mile was 2. Pop., 1867, 10,780,000.

BREACH OF TRUST.—A violation of duty by a trustee, executor, or other person in a fiduciary position. A breach of trust was not punishable as a criminal offence until the passing of 20 & 21 Vict. c. 54, in 1857. [*FRAUDULENT TRUSTEES ACT.*]

BREAD, ASSIZE OF; ADULTERATION OF.—The first Stat. for regulating the sale of bread was 3 John, *Assessa Panis*, A.D. 1203. The chief justiciary and a baker commissioned by the King had the inspection of the assize.—*Matthew Paris*. The assize was further regulated by Stat. 51 Henry III., 1266; and by 8 Anne, 1710. These Acts were repealed in 1824.

The first direct Act against the *Adulteration of Bread* was passed in 1822, the 3 Geo. IV. c. cvi.; *An Act to repeal the Acts now in force, relating to bread to be sold in the City of Lond. and the Liberties thereof, and within the Weekly B. of Mort., and ten miles of the Royal Exchange; and to provide other regulations for the making and sale of bread, and preventing the adulteration of meal, flour, and bread, within the limits aforesaid.* By the 6 & 7 Wm. IV. c. 37 (1836), these provisions were to be extended to the entire kingdom of Gt. Brit. (not Ireland), and bread was thereafter to be sold by weight. By the 1st Vict. c. 28, the regulations as to bread were extended to *Ireland*.

BREAK OF LIFE.—It is a well-known result of all European contributions to V. statistics, that a marked change, the causes of which are but very imperfectly understood, takes place in the law of mort. about the age of 55—so much so, that Dr. Farr, in constructing the *English L. T.* for the Reg.-Gen., actually used different mathematical laws for the formation of his T. before and after this age; and this period has been called the “break of life.”—*Professor Gill, Report on N. Y. Mutual, 1851.*

BREAKING BULK.—A term formerly used to signify the separation of goods in the hands of

a bailee, which made him liable for felony. Since 24 & 25 Vict. c. 96 (1861), this distinction is immaterial.

BREAST MILK, WANT OF.—Deaths from this cause, which are too common, are classed under *Zymotic*, of the order *Dietic*. The fluctuations are very small, as will be seen by the following figures, applying to ten consecutive years: 1858, 997; 1859, 1017; 1860, 1002; 1861, 970; 1862, 1006; 1863, 1158; 1864, 1253; 1865, 1410; 1866, 1410; 1867, 1437. The numbers appear to be steadily on the increase; over a period of fifteen years ending 1864, they averaged 44 per million of the pop. living. The deaths in 1867 were: Males, 805; Females, 632; and were generally under 1 year of age.

BREECHING.—A contrivance in metal in connexion with the working of hose from fire engines, by means of which two streams of water can be directed from one engine; or streams from two engines ejected from one nozzle. The *Lond. Assurance Corporation's* engines had such an appliance as early as 1828. In 1844 Lord Thurlow regis. a form of breeching by means of which one engine could throw three separate streams of water at once, or three separate engines be worked through one nozzle. [FIRE ENGINES.]

BREMIKER, DR., pub., in Berlin, in 1859, *Das Risiko bei Lebensversicherungen*—The risk attaching to the grant of ins. on lives. Mr. Sprague has furnished a translation of this paper for the benefit of the readers of the *Assu. Mag.* [vol. 16, p. 216.] We shall speak of it under other heads.

BREMNER, HUGH, was agent of the Lond. branch of *City of Glasgow L.* from opening of the branch in 1845 down to 1852.

BRESLAU, CITY OF.—Breslau is the capital of the province of Silesia; and one of the principal cities in Germany. Our interest centres in it entirely from the fact that from its regis. or bills of mort. were obtained the data for the first Life Table of which we have any record. It is situate on a spacious plain at the confluence of the Ohlau and Oder; bounded on the north by the Trebnitz Mountains; and on the south at a greater distance, by those of Zobten. The streets of the city, which was formerly fortified, are narrow, but the houses for the most part well built. It manufactures gloves, jewelry, silks, woollens, cottons, and stockings. Its pop. in 1710 was 41,000; by 1844, it had increased to 103,282; by 1846 to 112,194. We have very little other information concerning the place; except such as we shall give in the next art.

In this city the ann. average births regis. between the years 1717 and 1725 was 1252; of burials 1507. A great proportion of the children died under 10. Sussmilch furnished statistics tending to show that the mort. of children under 5 was very large in this city.—*Dr Price.*

The following were the burials for the 6 consecutive years 1720–25.

Years. ..	1720	1721	1722.	1723	1724	1725	} Average
Numbers..	1816	1482	1791	1321	1466	1441	

The city was burned by the Mongols in 1241.

BRESLAU TABLE OF MORTALITY.—The formation of this celebrated Table—celebrated because it was the first formed upon actual data scientifically arranged—came about in this wise. The efforts of Graunt and Petty had resulted in mere approximations of the value, or probable duration, of Human Life. The Bills of Mort. which formed the basis of their observations did not then record the ages at death; and the results consequently were very vague and unsatisfactory. This state of matters engaged the attention of scientific men towards the close of the 17th century: and accordingly an effort was made to obtain access to regis. which did record the ages at death. It was found that in the City of Breslau in Silesia such records had been kept, at least during several years; and on the application of Mr. Justell—a member of the Royal Society—to Dr. Newmann, of that city, copies of such registers were obtained. This was in the year 1692. The returns were for the 5 years 1687–91. They comprised a total of 6193 births and 5869 deaths.

Having obtained the materials, the next thing was to find a competent mathematician to work upon them. Dr. Halley was at that time a mathematician of great distinction, and he was selected, probably by the Royal Society, for the task. The result of his labours appeared early in the succeeding year under the following title, in a paper submitted to the Royal So., and pub. in *Phil. Trans.* for 1693: *An estimate of the degrees of the Mort. of Mankind, drawn from curious Tables of the births and funerals of the City of Breslau; with an attempt to ascertain the price of annuities upon lives.* By E. Halley, F.R.S. It is important to understand the author's own views of the task he had undertaken and performed. Dr. Halley commenced his paper as follows:

The contemplation of the mort. of mankind has, besides the *moral*, its *physical* and *political* uses, both which have been some years since most judiciously consider'd by the curious Sir William Petty, in his natural and political obs. on the B. of Mort. of Lond., owned by Capt. John Graunt. And since, in a like treatise, on the B. of Mort. of Dublin. But the deduction from those B. of Mort. seemed even to their authors to be defective. First: In that the *number* of the people was wanting. Secondly: That the *ages* of the people dying was not to be had. And lastly: That both Lond. and Dublin, by reason of the great and casual accession of strangers who die therein (as appeareth in both by the great excess of funerals above the births), rendered them incapable of being standards for this purpose; which requires, if it were possible, that the people we treat of should not at all be changed, but die where they were born, without any adventitious increase from abroad, or decay by migration elsewhere.

This defect seems in a great measure to be satisfied by the late curious T. of the B. of Mort. of the City of Breslau, lately communicated to this honourable So. by Mr. Justell, wherein both the ages

and sexes of all that die are monthly delivered, and compared with the number of the births for five years last past, viz. 1687, 88, 89, 90, 91, seeming to be done with all the exactness and sincerity possible.

The City of Breslau is the capital City of the Province of Silesia, . . . and very nigh the latitude of Lond. It is very far from the sea, and as much a Mediterranean place as can be desired, whence the confluence of strangers is but small, and the manufacture of Linnen employs chiefly the poor people of the place, as well as of the country round about. . . . For these reasons the people of this City seem most proper for a standard; and the rather for that the births do a small matter exceed the funerals. The only thing wanting is the number of the whole people, which in some measure I have endeavoured to supply by the comparison of the mort. of the people of all ages, which I shall from the said bills trace out with all the accuracy possible.

Then follows the T., the arrangement of which we have slightly modernized. Age Curt., we presume, stands for "Age Current."

Age Curt.	Persons	Age Curt.	Persons	Age Curt.	Persons	Age Curt.	Persons	Age Curt.	Persons	Age.	Persons.
1	1000	18	610	35	490	52	324	69	152	7	5547
2	855	19	604	36	481	53	313	70	142	14	4584
3	789	20	598	37	472	54	302	71	131	21	4270
4	760	21	592	38	463	55	292	72	120	28	3964
5	732	22	586	39	454	56	282	73	109	35	3604
6	710	23	579	40	445	57	272	74	98	42	3178
7	692	24	573	41	436	58	262	75	88	49	2709
8	680	25	567	42	427	59	252	76	78	56	2194
9	670	26	560	43	417	60	242	77	68	63	1694
10	661	27	553	44	407	61	232	78	58	70	1204
11	653	28	546	45	397	62	222	79	49	77	692
12	646	29	539	46	387	63	212	80	41	84	253
13	640	30	531	47	377	64	202	81	34	100	107
14	634	31	523	48	367	65	192	82	28		
15	628	32	515	49	357	66	182	83	23	Sum	} 34,000
16	622	33	507	50	346	67	172	84	20	Total	
17	616	34	499	51	335	68	162				

This table Dr. Halley wished in effect to be interpreted thus: that of 1000 children aged 1 year, as many would live to attain the older ages respectively as were denoted by the numbers set opposite to those ages. From this it was to be argued that a child of 1 year old had precisely as many chances out of a thousand of attaining any particular age as there were survivors represented by the Table to attain that age. Nor was this relation confined to children of one year old. For as it was strictly a table representing consecutive survivors, so the "prospection" of a person of any specified age attaining an older specified age was distinctly denoted by as many chances of the number, commencing from such first age, as there were survivors attaining the older age.

Two examples by reference to the Table will suffice: thus, the chances of a child aged 1 year attaining 30 years of age would be represented by 531 chances out of 1000: and the chances of a person aged 20 attaining 40 would be 445 chances out of 598. In the same manner, *mutatis mutandis*, the chances of living and dying for all ages were easily ascertainable, the number of expectant survivors representing the chances of living, and the remainder, or the number who were not expected to survive, the chances of death.

These principles, self-evident as they may appear, yet really only became so when the Table of Mort. was created and arranged: and thus Dr. Halley by his simple arrangement effected the resolution of many questions by comparative inspection, which previously were wholly incapable of even approximate answers.

The preceding Table seems not only interesting to the general reader as the first complete Table of Mort. upon record, but also as constituting the first real step in the art of life-measurement. It may further be added, as a fair tribute to Dr. Halley's skill, that 150 years of subsequent consideration by the most eminent mathematicians of Europe have only tended to confirm the eligibility of the form primarily chosen, even the most modern Tables of Mort. being still arranged on the same principle.—*Farren*, 1844.

The reader must not overlook the fact that Graunt had adopted a very similar arrangement in his Table published thirty years previously. [MORT. TABLES.]

The following is an enumeration of the uses to which Dr. Halley considered his Table might be applied:

The first use hereof is to show the proportion of men able to bear arms in any multitude, which are those between 18 and 56 years. . . .

The second use of this T. is to show the differing degrees of mort., or rather vitality, in all ages. . . .

Use III. If it be inquired of what number of years, it is an even lay that a person of any age shall die, this T. readily performs it; for if the number of persons living of the age proposed be halved, it will be found by the T. at what year the said number is reduced to half by mort.; and that is the age to which it is an even wager that a person of the age proposed shall arrive before he die—as for instance: A person of 30 years of age is proposed, the number of that age is 531, the half thereof is 265, which number I find to be between 57 and 58 years, so that a man of 30 years may reasonably expect to live between 27 and 28 years.

Use IV. By what has been said, the price of ins. upon lives ought to be regulated; and the difference

is discovered between the price of insuring the life of a man of 20 and 50. For example: It being 100 to 1 that a man of 20 dies not in a year, and but 38 to 1 for a man of 50 years of age.

Use V. On this depends the valuation of annu. upon lives. . . .

Use VI. Two lives are likewise valuable by the same rule. . . .

Use VII. Three lives are proposed. . . .

The subject of Ins. Wagers was strong in the learned Doctor's mind when he wrote this summary. And it must be noted also that he speaks of the "price of ins. upon lives," clearly showing what indeed we now know, *that life ins. was a matter of common practice at that period*: but the insurances were for specific periods, and were undertaken by individual underwriters, in the same manner as marine policies were then, and are now, written. Dr. Halley adds a supplemental use or reflection, in the following form:

Besides the uses mentioned, it may perhaps not be an unacceptable thing to infer from the same T. how unjustly we repine at the shortness of our lives, and think ourselves wronged if we attain not old age; whereas it appears hereby that one half of those that are born are dead in 17 years' time, 1238 being in that time reduced to 616; so that instead of murmuring at what we call an untimely death, we ought, with patience and unconcern, to submit to that dissolution which is the necessary condition of our perishable materials, and of our nice and frail structure and composition, and to account it as a blessing that we have survived perhaps by many years that period of life whereat the one half of the whole race of mankind does not arrive.—*Phil. Trans.*, No. 198, vol. xvii.

In our art. ANNUITIES UPON LIVES, we have already shown the important bearing which the results of this T. ought to have had upon all financial dealings of that character. To say that the Gov. of the day was very slow to profit by its teachings, although so much of the national finance was accomplished by means of L. annu., or that private individuals profited by using the obvious lessons of the T. to their individual advantages as against the Gov., is only to state that which all who are conversant with our financial history are already aware of. It took some years to make the advantages of a scientific mode of life measurement at all appreciated by those most concerned.

In Edward Lawrence's *Dissertation on Estates for Lives*, etc. (1730), Halley's Table was inserted and recommended for adoption in preference to the imaginary estimates on lives then current; and in the same year, John Richards, of Exeter, pub. Tables for valuing estates, leasehold and for lives, founded on Halley's estimate, and De Moivre's hypothesis.

In 1752 W. Dodson, F.R.S., submitted to the Royal So. some remarks on the decrement of life exhibited in the *Breslau Table*; and the same were pub. in the *Phil. Trans.* of that year.

In 1753 Kerseboom pub.: *A view of the relation between the celebrated Dr. Halley's Tables, and the notions of M. de Buffon for estab. a rule for the prob. duration of the life of man*. In the same year James Hardy's *Complete System of Int. and Annu.* contained annu. values deduced from this table.

De Moivre, in the 3rd ed. of his *Doctrine of Chances*, 1756, said "The first T. is that of Dr. Halley, composed from the bills of mort. in the city of Breslau; the best perhaps as well as the first of its kind; and which will always do honour to the judgment and sagacity of its excellent author." And then, after naming various other T., he returns to the Breslau T., and adds:

We may therefore retain this last as no bad standard for mankind in general, till a better police, in this and other nations, shall furnish the proper data for correcting it; and for expressing the decrements of life more accurately and in larger numbers.

Again:

The celebrated M. de Buffon has lately given us a new T. from the actual obs. of Mons. du Pré de St. Maur, of the French Academy. This gentleman, in order to strike a just mean, takes 3 populous parishes in the city of Paris and so many country villages as furnish him nearly an equal number of lives; and his care and accuracy in that performance have been such as to merit the high approbation of the learned editor.

He then details the steps he had taken for comparing this T. with Halley's, and adds: "There resulted only a mutual confirmation of the two tables; Mr. Du Pré's T. making the lives somewhat better as far as 39 years, and thence a small matter worse than they are by Dr. Halley's.

Benjamin Martin's *Decimal Arithmetic*, pub. 1763, contained a reprint of Halley's T., and the same indeed may be said of nearly all the works pub. before the appearance of the *Northampton T.*

It was a very general complaint by the writers of this period that the *Breslau T.* was not adapted to the purposes of annu. and ins. asso. founded in Lond.; but the writers did not at all harmonize in their views as to the grounds of its unsuitability. Indeed, on the one hand, it was contended that in the small city of Breslau the value of life must be much greater than its value in the overgrown and plague-smitten city of Lond.; while, on the other hand, it was contended that whatever the faults of Lond. might be, continental life could never be compared in point of healthfulness to that of English life, and it was very doubtful whether all continental cities had not a greater mort than Lond. We shall have occasion to notice some of these statements under LONDON, MORT. T. FOR.

The *Laudable So. of Annuitants* was founded in 1766. In a few years it was found that its promised advantages to its members were much too large in relation to the payments made by them to the So. A controversy arose; it was asserted on behalf of the founders of the So. that they had promised no more than the *BRESLAU TABLE* would

justify. An investigation into the mort. of the So. took place about 1775, and it was found that the *real* mort., for a period of about 7 years, *was only a little more than half that predicted by this T.*

Mr. Milne says [art. 'Annu.,' *Encyclo. Brit.*]:

That celebrated mathematician first gave a T. of Mort., which he had constructed from obs. made at Breslau, and showed how the prob. of life and death, and the values of annu. and assu. on lives, might be determined by such T.; which he informs us had *till then been only done by an imaginary valuation.*

In an art. upon *Human Mort.* in the same pub., Mr. Milne further says:

The Breslau bills appear to have been the first wherein the ages at which the deaths took place were inserted; and the most important information which B. of Mort. can afford was first drawn from them by Dr. Halley.

In the 5th report of Reg.-Gen. (1843) are the following judicious observations:

Halley's T. was calculated on the deaths in the City of Breslau, which for various reasons he selected, from the imperfect data at his disposal, "as the most proper for a standard, and the rather for that the births did a small number exceed the funerals." He was aware that he wanted the number of the whole people for an accurate calculation; but Halley's T., constructed upon nearly the same hypothesis as the *Northampton* T., represented the mort. of mankind with as little inaccuracy, and was upon the whole as good a standard. He observes, "It may be objected that the different salubrity of places does hinder the proposal from being universal, nor can it be denied;" but "it is desirable that, in imitation hereof, the curious in other cities would attempt something of the same nature, than which *nothing perhaps can be more useful.*"

Mr. W. T. Thomson says [*Proof-Sheets*, 1856]:

The T. of Dr. Halley is arranged exactly in the same form as the Mort. T. of the present day, and shows the numbers living at each age, being the first T. of the kind.

The following is the Breslau T. in a complete form, showing the expectation of life at all ages:

Age.	Living.	Dying.	Expecta- tion.	Age.	Living.	Dying.	Expecta- tion.	Age.	Living.	Dying.	Expecta- tion.
1	1000	145	33'22	31	523	8	26'82	61	232	10	11'77
2	855	57	37'77	32	515	8	26'23	62	222	10	11'32
3	798	38	39'43	33	507	8	25'64	63	212	10	10'83
4	760	28	40'38	34	499	9	25'04	64	202	10	10'24
5	732	22	40'90	35	490	9	24'50	65	192	10	9'86
6	710	18	41'16	36	481	9	24'15	66	182	10	9'37
7	692	12	41'22	37	472	9	23'60	67	172	10	8'89
8	680	10	40'94	38	463	9	23'26	68	162	10	8'40
9	670	9	40'54	39	454	9	22'72	69	152	10	7'93
10	661	8	40'08	40	445	9	22'16	70	142	11	7'45
11	653	7	39'57	41	436	9	21'61	71	131	11	7'03
12	646	6	38'99	42	427	10	21'06	72	120	11	6'64
13	640	6	38'35	43	417	10	20'55	73	109	11	6'25
14	634	6	37'71	44	407	10	20'04	74	98	10	5'89
15	628	6	37'07	45	397	10	19'53	75	88	10	5'51
16	622	6	36'42	46	387	10	19'05	76	78	10	5'15
17	616	6	35'77	47	377	10	18'55	77	68	10	4'84
18	610	6	35'12	48	367	10	18'04	78	58	9	4'59
19	604	6	34'46	49	357	11	17'53	79	49	8	4'34
20	598	6	33'80	50	346	11	17'07	80	41	7	4'08
21	592	6	33'14	51	335	11	16'61	81	34	6	3'80
22	586	7	32'49	52	324	11	16'16	82	28	5	3'54
23	579	6	31'85	53	313	11	15'71	83	23	4	3'19
24	573	6	31'29	54	302	10	15'26	84	19	4	2'76
25	567	7	30'51	55	292	10	14'77	85	15	4	2'37
26	560	7	29'87	56	282	10	14'27	86	11	3	2'05
27	553	7	29'26	57	272	10	13'79	87	8	3	1'63
28	546	7	28'63	58	262	10	12'91	88	5	2	0'80
29	539	8	27'99	59	252	10	12'79	89	3	2	0'33
30	531	8	27'41	60	242	10	12'30	90	1	1	0'00

[LIFE INS., HIST. OF.] [LOND. MORT. T.] [MORT. T., HIST. OF.]

BREST.—A seaport on the extreme western coast of France, and for a long period the chief naval station of that country. In 1744 its magazines were destroyed, causing a loss of many millions sterling in stores. In 1766 another fire occurred, destroying the marine hospital. In 1784 the magazine was again destroyed by fire. But the chief interest centres in the place from the fact of its having been for many years the usual limit southwards to which lives insured *were allowed to travel without payment of extra prem.* This seems to provoke almost a smile of derision now; yet before steam-navigation was so extended and efficient, as it has since become, there was something to be said in favour of such limitation. Besides, the place stands sentinel over the much-dreaded Bay of Biscay. [FOREIGN RESIDENCE, ETC.]

BRETTLE, JOSEPH C., was Sec. of *Royal Naval and Military*, etc., Life, for some years, down to 1853.

BREVE.—A writ by which a person is summoned or attached to answer an action, complaint, etc., or whereby anything is commanded to be done in the Courts, in order to justice, etc. It is called *breve* from the brevity of it.—*Wharton*.

BREVE CONSULUM MARIS.—A manual compiled for the magistrates of Pisa entrusted with the administration of the maritime jurisdiction, in which were minutely explained the rules and the forms which they were to observe in the exercise of their functions. A manual of this description existed in the middle of the 13th century. There were also the *Breve Curie Artium*; the *Breve Curie maris*; and the *Breve Consulum Curie Mercatorum*, continuations and later modifications of the above. [PISA, MARITIME STATUTES OF.]

BREVE PORTUS CALLERITANI (Cagliari), compiled in 1318 by the commissioners of the Republic of Pisa, which had then long had estab. Courts [? Consular Courts] in Sardinia. [MARINE INS., HIST. OF.]

BREWERS', DISTILLERS', LICENSED VICTUALLERS', AND GENERAL LIFE AND FIRE ASSU., AND LOAN AND ENDOW. Co., founded in 1851, on the proprietary principle, with an authorized cap. of £125,000, in shares of £10. About £56,000 of its cap. was subs. The paid-up cap. was returned as £2960, which was soon lost, and calls were made upon the shareholders to close up the affairs of the Co.

Its first and last payment on F. duty amounted to £89 15s. 3d.; this was made in the Dec. quarter of 1851.

BREWERS' DRAYMEN.—In a paper by Mr. H. W. Porter, B.A., which appeared in the 9th vol. of *Assu. Mag.* [1860], *On some Considerations suggested by the Ann. Reports of the Reg.-Gen., being an Inquiry into the Question as to how far the Inordinate Mort. in this Country, exhibited by those Reports, is Controllable by Human Agency*, we find the following instructive remarks:

The Registrar observes, that the red injected face of the butcher is an indication of disease—to the ordinary observer this might be an indication of robust health. Similarly with respect to brewers' draymen, their appearance would indicate that they were blessed with strong constitutions; this is not however the case. It is found in the hospitals that these men are a very difficult class to treat when attacked with inflammatory symptoms; and they are very prone to such attacks, and succumb readily to them. Their horses, which are often good matches for their masters in appearance, have very much the same attributes as the men; and as the draymen prob. acquire their peculiarity of appearance, and of constitution, from the quantity of beer they imbibe, and owing to the insufficient amount of active walking exercise they take in proportion to their potations, so perhaps are the horses affected by much the same causes, by being fed to some extent on the brewers' grains, which act no doubt on their livers as the beer does on those of their masters. . . .

BRIDGES, WILLIAM, was Sec. of *Universal Emigration and Colonization* Ins. Co. at its commencement in 1849. In 1850 he became Act. and Sec. of the *Mitre L.*, which position he retained until 1859. In 1854 he was advertised as Act. of the *Ark* (No. 2). He subsequently became Sec. of the *Friendly Sos. Inst.* He pub. in 1850, *Freehold Assu. and the Farmer's Estate So.*

BRIEFS [usually called King's or Queen's briefs] are licences to make collection for repairing churches, restoring loss by fire, etc. Several centuries since these briefs were of very frequent use, as will be seen in our hist. of FIRE INS. Before F. ins. became general, a large fire hardly ever occurred without these documents being called into requisition. In 1705 was passed, the 4th Anne c. 14, *An Act for the better collecting Charity Money on Briefs by Letters Patent, and preventing abuses in relation to such charities*. Wherein it is recited: "Whereas many inconveniences do arise, and frauds are committed in the common method of collecting charity money upon briefs by letters patent, to the great trouble of the objects of such charity, and to the great discouragement of well-disposed persons." For remedy whereof it was provided that from 25th March, 1706, all copies of briefs for collecting charity money should be printed by the Queen's printers. Ministers of churches and of chapels, on some Sunday within 2 months after receipt of copy of brief, were to openly read the same before the sermon. The churchwardens were to indorse on brief the amount collected, and remit the same with brief to the "undertaker" employed in the matter. These undertakers were men appointed for working the particular charity to which the brief related, and were paid a commission on the proceeds. They were liable to penalties if they failed to comply with the provisions of this Act. All the returned briefs were to be deposited with the Reg. of the Court of Chancery. The Act further recites: "And whereas there hath been an evil practice in farming and purchasing for a sum of money that should or might be collected on such briefs, to the very great hindrance and discouragement of almsgiving on such occasion." The Act forbade such practices thereafter.

BRIG.—The general term for a vessel having two masts, with a boom mainsail, being otherwise square-rigged—that is, having her sails brought to yards hung horizontally by the middle. Supposed to be an abbreviation of *brigantine*.

BRIGGS, HENRY, one of the greatest mathematicians of the 16th and 17th centuries. He was born near Halifax, in Yorkshire, 1556. He died in 1630, aged 74. He wrote to Archbishop Usher in 1615 that he was wholly taken up and employed about the noble invention of logarithms, which had come out the year before, and in the improvement of which he had so great a share. Briggs expounded the construction of logarithms in his

lectures at Gresham College. In these lectures he proposed the alteration of the scale from the hyperbolic form which Napier had given them, to that in which 1 should be the logarithm of the ratio of 10 to 1; and soon after he wrote to Napier to make the same proposal to himself. In the year 1616 Briggs made a visit to Napier, at Edinburgh, to confer with him upon this change; and the next year he did the same also. In these conferences the alteration was agreed upon; and on Briggs's return from his second visit he pub. *Logarithmorum chiliad prima*; i.e., the first chiliad, or 1000 of his logarithms.

In 1624 he pub. *Arithmetica Logarithmica*, containing the logarithms for 30,000 natural numbers to 14 places of figures, besides the index. "A stupendous work for so short a time."—*Hutton*.

In 1633 was pub. at Gonda, where the tables had been printed, under the care of Adrian Vlacq: *Trigonometria Britannica*, being a complete table of logarithmic sines and tangents for the 100th part of every degree to 14 places of figures, besides the index.

BRIGGS'S LOGARITHMS.—The common or vulgar system of logarithms, constructed on the base of 10, is sometimes called Briggs's system, after their constructor Henry Briggs, a contemporary of Lord Napier. [LOGARITHMS.]

BRIGHTON FIRE INS. CO.—There was a Fire Ins. Co. under this name started in Brighton either late in the last or early in the present century. It had ceased to carry on bus. before 1824. We can learn no exact particulars concerning it.

BRIGHTON AND SUSSEX MUTUAL F. ASSO.—This Asso. was founded at Brighton in 1850, to be carried on in connexion with a L. office bearing a similar title.

In 1854 the bus. was transferred to the *Sun*. Its duty return in 1853 was £630 or. 3d. The Rev. Robert Winter was Sec.

BRIGHTON AND SUSSEX MUTUAL PROVIDENT LIFE AND FRIENDLY SO., founded at Brighton in 1846, under the F. Sos. Acts. The So. appears to be making satisfactory progress. In 1851 its accumulated funds amounted to £9803; by 1861 they had reached £22,713, and in 1871 they stood at £36,812.

BRIGHT'S DISEASE (*Albuminaria*).—A diseased state of the kidney, occasioning the secretion of albuminous urine, and first described by Dr. Richard Bright. It is also called *granular disease of the kidney*, from the morbid condition presented by this organ.—*Hoblyn*. [NEPHRIA.]

BRINTON, DR., M.D., pub. in 1856 a useful little book, *On the Medical Selection of Lives for Assu.* A 3rd ed. was pub. in 1861; a 4th in 1869, edited by Dr. Harley. We shall speak of this more at large under SELECTION, MEDICAL.

BRISTOL.—An English city, which several centuries since ranked in point of maritime importance second only to Lond. It is now endeavouring to regain its maritime renown.

The *Phil. Trans.* for 1753 contains the results of a summation of *burials* in Bristol from 1741 to 1750, compiled by Mr. Browning from the regis. of the 17 parishes, and the So. of Friends, Baptists, and Jews—including the whole of such parishes as extend beyond the city. The total number of burials in 10 years was 17,317, whence, by assuming the ann. deaths to average one-25th of the pop., Mr. Browning estimates the total pop. at 43,275. He comes nearly to the same conclusion by taking the number of houses rated to the land-tax (4866), adding one-fourth for omissions, and 1228 for the out-parishes, and multiplying the total (7282) by 6—the supposed number of inhabitants in each house—which gave a pop. of 43,692.

In 1818 obs. were taken of the number of burials for the preceding 5 years, and a mort. T. was constructed therefrom. [BRISTOL MORT. TABLES.]

In 1861 the number of inhabited houses in the city was 23,590, and the pop. 154,093; in 1871, number of houses 27,547; pop. 182,524.

Few places have suffered more than Bristol from cholera. In 1832 1612 cases and 626 deaths were officially reported, but Dr. Symonds has adduced reasons for believing that the real number of deaths was little short of 1000. In 1849 there were 1979 deaths, and in 1854 there were 430. This great diminution was probably due to the alteration that had been made during the interval in the relation previously existing between sewage and drinking water, and may, perhaps, be fairly regarded as a proof of the value of general sanitary measures, as contrasted with special disinfection.

The city has more recently been changed from nearly the most unhealthy to be nearly the most healthy town in Gt. Brit. In Sept., 1865, it was returned as having the smallest mort. (19 p. 1000) in the U. K., the highest (that of Manchester) being 34. The ordinary death rate of Bristol, excluding epidemic cholera, was 28 p. 1000 before the execution of its sanitary works, and stood at 27 from 1862 to 1865, after the completion of these works. In 1865 it fell to 23.5, in 1866 rose to 24.9, in 1867 fell again to 23, and in 1868 to 22.7. The pop. is estimated at 172,000, and a simple calculation shows that, without taking cholera into account, about a thousand lives are saved every year by the change in the rate of mort.—*Dr. Budd's Paper before the Social Science Congress*, 1869.

According to Mr. Davies, the disease which now chiefly serves to keep up the Bristol death-rate is bronchitis. He attributes this, in some measure, to the loading of the air with smoke.

Very few ins. asso. have succeeded in making much money from their agencies or branches in this city.

BRISTOL BARGAIN.—Where A. lends B. £1000 on good security, and it is agreed that

£500, together with int., shall be paid at a time stated ; and as to the other £500, that B. in consideration thereof shall pay unto A. £100 p.a. for 7 years.

BRISTOL CROWN FIRE INS. CO., founded in Bristol prob. towards the end of the last century. In 1805 it paid duty £1257 19s. 10d. In 1831 it paid £1866 8s. 4d. In 1837 its bus. was trans. to the *Sun F.*

BRISTOL FIRE INS. CO., founded in Bristol prob. about 1814. In 1831 it paid in F. duty £3977 13s. 7d., being a much larger amount than the two other then existing offices, viz., the *Bristol Crown* and *Bristol Union*. In 1839 its bus. was trans. to *Imperial F.*

BRISTOL AND LOND. ASSU. CORP., LIM., founded in Bristol in 1869, with an authorized cap. of £2,000,000, in shares of £ ; under the title of the *Bristol and Lond. Life and Guarantee Ins. Co., Lim.* Mr. J. W. N. Brooks and Mr. Morgans were two of the regis. promoters. The prosp. of the Co. says the object of the Corp. is to embrace every principle in connexion with L. assu. which can with security be adopted ; “and for this purpose all the varied improvements and extensions of L. assu. have been introduced, so far as they have been found practically useful and attractive.” Among the “leading features” are the following : “Invalid or second-class lives assured without extra rates” —on Black’s plan, but the prosp. does not say so. “Reduced rates for females” :

As it is an estab. fact, and admitted in practice by actuaries in their calculations for annu., that the average duration of females is greater than that of males. The directors of this Corp. have on the whole-term life rates for females made a reduction, *which can be known on application to the head office, or any of the agents.*

Surely this is advancing a step backwards.

BRISTOL AND LOND. LIFE AND GUARANTEE INS. CO., LIM.—See **BRISTOL AND LOND. ASSU. CORP., LIM.**

BRISTOL MARINE INS. CO., LIM., estab. in Bristol in 1865. The authorized cap. of the Co. was £500,000 ; first issue £200,000, in 10,000 shares of £20 each. Mr. C. F. Ivens is the first regis. promoter. In 1869 the bus. was trans. to the *United Ports*. Its affairs are now in liquidation.

BRISTOL MORTALITY TABLES.—In a work pub. by Mr. Robt. Rankin, Sec. to the *Bristol Union F. and L. Ins. Co.*, in 1830 : *A Familiar Treatise on Life Assu. and Annu.*, etc., there was contained several orig. T. of Mort., and among these one “Of the Prob. and Expectations of Life in the City of Bristol.” The author says :

In the year 1818, when the estab. of the first, and as yet the only life assu. office in Bristol, was in contemplation, I was desirous of ascertaining the rate of mort. prevailing in the prob. field of its principal bus., relatively to that of the metropolis ; and with that view, extracted from the burial regis. of this city and its suburbs, the number of deaths at every age during the preceding 5 years, a period practically sufficient for an average in a place of this magnitude.

From these data, T. of the prob. and expectations of life were deduced, which, when compared with the pub. prob. and expectation of life in the metropolis, evinced a decided superiority, so decided indeed as (when coupled with other considerations) satisfactorily to warrant the adoption of a scale of prems. 10 p.c. below those taken by the Lond. offices generally ; and on this reduced scale the office was estab.

Although fully satisfied on principle, that an average of 5 years was sufficient, I felt a natural curiosity to see the correspondence of the next term of 5 years with it, and was therefore induced to undertake the task of ascertaining it ; *and the result exhibited a coincidence, even surpassing, by its minuteness, my most sanguine expectations.*

Here is the precise data upon which Mr. Rankin based his obs.

Total of burials in the city of Bristol and Bedminster from 1813 to 1822 inclusive :

List of respective Burying Grounds.	1813 to 1817.		1818 to 1822.		Total.
All Saints			8	...	} 279
Christ Church	...	...	32	...	
Cathedral	...	...	40	...	
Saint Augustine	...	...	508	...	1183
Saint James	...	...	961	...	1834
Saint John	...	...	74	...	137
Saint Mary Redcliff	...	...	751	...	1330
Saint Mary-le-Port	...	...	53	...	128
Saint Michael	...	...	577	...	1109
Saint Nicholas	...	...	150	...	286
Saint Paul	...	...	463	...	851
Saint Peter	...	...	128	...	259
Saint Philip and Jacob	...	...	1231	...	2437
Saint Stephen	...	...	187	...	352
Saint Thomas	...	...	151	...	263
Saint Werburg	...	...	31	...	54
St. Mary (Bedminster)	...	...	660	...	1265
Temple, or Holy Cross...	...	...	950	...	1903
TOTAL FROM PARISH REGIS.	6665	...	7005	...	13,670
Brunswick Sq. Burying Ground	167	...	163	...	330
Baptists'	297	...	239	...	536
Friends'	137	...	127	...	264
Tabernacle	464	...	491	...	955
City	187	...	147	...	334
Portland Chapel	182	...	156	...	338
Moravian, Catholic, &c.	—	...	78	...	78
Undertakers' Grounds	2027	...	2034	...	4061
TOTAL FROM ALL OTHER REGIS.	3461	...	3435	...	6896
Grand Total in 10 years	10,126	...	10,440	...	20,566

Thus we see that the observations over the first quinquennium embraced 10,126 deaths; and that over the second 10,440. Total deaths observed upon, 20,566. Mr. Rankin said (1830):

I have nearly completed a third series of 5 years' obs., which I may confidently state will corroborate the deductions from the two preceding series of 5 years; though I deem it unnecessary to delay the pub. of this work on account of them; the result however shall be annexed to the orig. MS. deposited in the Bristol Institution.

We now turn to the process he employed in preparing the preceding table of data:

To secure correctness, I personally extracted from the various registers the burials with the respective ages of the deceased . . . , rejecting only casualties, suicides, and criminals. . . . I have not however attempted a correction to countervail the influence of migration, increased pop., etc., because such correction could not be verified, and of course would be too vague to be relied on with a view to practical utility; though I feel assured that the result would be a much nearer approximation to the true rate of mort. among the pop. at large than either the *Northampton* or *Carlisle* Tables.

Here is his table:

Probabilities and Expectations of Life in Bristol reduced to a Radix of 10,000.

Age.	Living.	Decre- ment.	Expecta- tion.	Age.	Living.	Decre- ment.	Expecta- tion.	Age.	Living.	Decre- ment.	Expecta- tion.
0	10000	1903	28.78	33	4112	78	26.51	66	1501	84	10.56
1	8097	858	34.42	34	4034	81	26.01	67	1417	82	10.15
2	7239	545	37.44	35	3953	81	25.53	68	1335	82	9.75
3	6694	372	39.45	36	3872	81	25.06	69	1253	78	9.35
4	6322	231	40.74	37	3791	81	24.58	70	1175	78	8.94
5	6091	160	41.27	38	3710	78	24.11	71	1097	77	8.54
6	5931	108	41.37	39	3632	78	23.61	72	1020	77	8.15
7	5823	100	41.13	40	3554	78	23.12	73	943	77	7.77
8	5723	76	40.84	41	3476	77	22.63	74	866	72	7.42
9	5647	57	40.38	42	3399	77	22.13	75	794	72	7.04
10	5590	57	39.79	43	3322	77	21.63	76	722	72	6.70
11	5533	49	39.19	44	3245	77	21.13	77	650	64	6.38
12	5484	44	38.54	45	3168	77	20.63	78	586	60	6.03
13	5440	44	37.85	46	3091	77	20.14	79	526	60	5.66
14	5396	42	37.15	47	3014	77	19.64	80	466	59	5.32
15	5352	42	36.45	48	2937	77	19.14	81	407	57	5.02
16	5310	42	35.74	49	2860	73	18.64	82	350	54	4.75
17	5268	45	35.02	50	2787	73	18.12	83	296	52	4.53
18	5223	60	34.32	51	2714	73	17.59	84	244	40	4.39
19	5163	70	33.71	52	2641	73	17.06	85	204	34	4.15
20	5093	70	33.17	53	2568	73	16.53	86	170	30	3.88
21	5023	75	32.62	54	2495	77	16.00	87	140	26	3.61
22	4948	75	32.11	55	2418	77	15.50	88	114	23	3.31
23	4873	75	31.59	56	2341	79	14.99	89	91	20	3.03
24	4798	75	31.08	57	2262	79	14.50	90	71	17	2.74
25	4723	75	30.57	58	2183	86	14.00	91	54	15	2.44
26	4648	75	30.05	59	2097	86	13.56	92	39	12	2.20
27	4573	75	29.53	60	2011	86	13.11	93	27	9	1.94
28	4498	77	29.02	61	1925	86	12.68	94	18	7	1.67
29	4421	77	28.52	62	1839	86	12.25	95	11	5	1.41
30	4344	77	28.01	63	1753	84	11.82	96	6	3	1.17
31	4267	77	27.51	64	1669	84	11.39	97	3	2	.83
32	4190	78	27.00	65	1585	84	10.97	98	1	1	.50

Mr. Rankin also constructed several other Mort. T., viz.: *Prob. and Expectations of Life among the So. of Friends in Bristol.* [FRIENDS, SO. OF.] *Prob. and Expectations of Life in the Parish of St. Geo., Kingswood, Gloucestershire.* [KINGSWOOD, MORT T. FOR.] *Prob. and Expectations of Life in the Parish of Clifton, Gloucestershire.* [CLIFTON, MORT. T. FOR.] These will be given under the heads indicated. There was yet another, *Prob. and Expectations of Life among the Poor of the City of Bristol.* This T. we give here. The compiler says regarding it:

The respectability of the proprietors of the private or undertakers' cemeteries in the city of Bristol, the mode of conducting them, and the regularity of their regis., gave us an opportunity of ascertaining with more correctness the rate of mort. among the lowest class, than perhaps any other place in the kingdom can afford. Having availed myself of it, I now present to those, if any such there are, who doubt the appalling effect of penury and its accompanying evils on the duration of life, a document which will at once remove such doubt. Though this T. may, from causes before noticed, represent the probabilities and expectations somewhat too favourably, yet, after making a larger allowance than the truth requires, a comparison with the preceding T., which includes the 4061 poor from which this T. was deduced, will show a large and melancholy balance in respect of human existence against the indigent. . . . It is worthy of remark that most of those who attain an advanced age are either members or the widows of members of friendly and benefit socs.

Probabilities and Expectations of Life among the Poor of the City of Bristol.

Age.	Living.	Decre- ment.	Expecta- tion.	Age.	Living.	Decre- ment.	Expecta- tion.	Age.	Living.	Decre- ment.	Expecta- tion.
0	4061	1007	20.36	31	1185	21	26.72	61	503	26	11.94
1	3054	450	25.90	32	1164	21	26.20	62	477	25	11.56
2	2604	364	29.26	33	1143	21	25.67	63	452	25	11.17
3	2240	236	32.98	34	1122	21	25.14	64	427	25	10.80
4	2004	130	35.80	35	1101	23	24.61	65	402	21	10.44
5	1874	85	37.25	36	1078	23	24.12	66	381	21	9.99
6	1789	52	37.99	37	1055	23	23.64	67	360	21	9.54
7	1737	42	38.12	38	1032	22	23.15	68	339	21	9.13
8	1695	32	38.05	39	1010	22	22.65	69	318	21	8.67
9	1663	30	37.77	40	988	22	22.14	70	297	21	8.25
10	1633	26	37.46	41	966	22	21.63	71	276	20	7.84
11	1607	26	37.05	42	944	22	21.13	72	256	20	7.41
12	1581	26	36.65	43	922	20	20.62	73	236	19	7.00
13	1555	26	36.26	44	902	20	20.06	74	217	19	6.57
14	1529	20	35.87	45	882	20	19.51	75	198	18	6.15
15	1509	13	35.34	46	862	20	18.95	76	180	18	5.72
16	1496	13	34.64	47	842	23	18.39	77	162	18	5.30
17	1483	13	33.94	48	819	23	17.89	78	144	17	4.89
18	1470	24	33.23	49	796	23	17.39	79	127	16	4.48
19	1446	24	32.78	50	773	23	16.90	80	111	16	4.06
20	1422	24	32.32	51	750	23	16.40	81	95	15	3.66
21	1398	24	31.87	52	727	24	15.90	82	80	14	3.25
22	1374	22	31.42	53	703	24	15.43	83	66	13	2.83
23	1352	22	30.92	54	679	24	14.95	84	53	13	2.41
24	1330	22	30.42	55	655	24	14.48	85	40	12	2.02
25	1308	22	29.93	56	631	24	14.00	86	28	10	1.65
26	1286	20	29.43	57	607	26	13.55	87	18	8	1.33
27	1266	20	28.89	58	581	26	13.13	88	10	6	1.00
28	1246	20	28.34	59	555	26	12.73	89	4	3	.75
29	1226	20	27.80	60	529	26	12.33	90	1	1	.50
30	1206	21	27.25								

BRISTOL AND SOUTH WALES CO-OPERATIVE LIFE ENDOWMENT AND GUARANTEE CO.—This Co. was projected in 1868 with a regis. cap. of £2000, but what has become of it we have not yet discovered. Mr. E. A. Theobald was one of the promoters.

BRISTOL TOWN FIRE OFFICE.—This asso. was founded towards the close of the last century. In 1805 it stood third in amount of duty paid by the country offices, its amount being £3320 18s. 4d.—an amount more than as large again as that paid by the *Bristol Crown* office in the same year. It had either died out before 1824 or changed its name to the *Bristol F.* or *Bristol Union F.*

BRISTOL UNION F. AND L. OFFICE, founded in Bristol in 1814 as a F. office, and added L. bus. in 1818. It paid F. duty in 1824, £2308; in 1834, £2552; in 1843 it had reached £3160. In 1844 its F. bus. was trans. to *Imperial F.* What became of the L. bus. we have not yet learned, but we have seen that Mr. Rankin, one of its Secretaries, brought his practical experience to bear in the construction of several mort. tables possessing considerable interest.

The later rates adopted in the L. department were 10 p.c. below the *Northampton* rates—that course being determined upon after the *Bristol* mort. T. had been prepared.

BRITANNIA FIRE.—A Co. under this title was projected in 1861, by Mr. Alfred Thomas Jay. It did not go forward.

BRITANNIA FIRE ASSOCIATION, founded in 1868, with an authorized cap. of £500,000, in 50,000 shares of £10 [power to increase to £1,000,000]. First issue 15,000 shares. The prosp. says:

The *Britannia F. Asso.* is founded with the view of cultivating F. ins. bus. of a select character, inclusive of the ins. of dwelling houses and shops, and of the furniture and goods therein.

Notwithstanding the rapid increase of F. ins. during the last ten years, it would appear that of the insurable property in the U. K., the value of which is estimated at about £4,000,000,000, about one-third only is protected by ins.

The recent reduction in the Gov. duty from 3s. to 1s. 6d. p.c. has already given a great impetus to F. ins., and there is but little doubt that the provident classes throughout the country will now almost universally adopt the wise precaution of protecting their property against loss by fire.

The B. F. A. has been formed under peculiarly favourable circumstances, from having immediately available the very extensive and valuable agency and other connexions of the *Briton Medical and General L. Asso.*, with which the *Britannia F. Asso.* will be intimately connected. Several of the directors are members of the boards of each Co., and the business of the F. Co. (although totally distinct and separate from that of the *Briton Asso.*, so far as its assets and liabilities are concerned), being conducted on the premises, and to some extent by the staff of the *Briton So.*, the expenses necessarily attending the efficient working of a large F. office will be materially curtailed.

The Co. is soundly constituted, and most respectably managed.

BRITANNIA LIFE ASSU. CO. [No. 1.], founded in 1837, with a cap. of £1,000,000, in 10,000 shares of £100. It was conducted in its earlier years entirely on the proprietary plan.

In 1841 the Co. obtained a special Act of Parl.—4 & 5 Vict. c. ix.—*An Act for Regulating Legal Proceedings by and against the Britannia L. Assu. Co.* The Co. might sue or be sued in the name of its Sec., Resident Director, or any Director for the time being; decrees or judgments might be enforced against the Co. or any of its shareholders—such shareholders to be reimbursed; former shareholders might be sued. Indeed, the constitution of the Co. appears to have embodied the principle of unlimited liability in its fullest force.

In 1845, Mr. Peter Morrison being then Resident Director, a statement was put forward that the Co. had issued 6000 policies in less than 8 years; and there was then inaugurated by the Co. a system of “half-credit rates of prem.,” with a special prosp. to explain its *advantages!* The Co. also about this date commenced to issue pol. on the “mixed” plan—called in a special prosp. then issued the “Mutual Assu. Branch”—which led to some confusion, there being already a *Britannia Mut. L. Asso.* working in connexion with this Co. The first division of profits was to be made “at the expiration of the year 1849, and of every subsequent year.” Four-fifths of profits “ascertained by strict mathematical calculations” to be distributed to parti. pol.

The tables used by the Co. were stated to have been “computed from authentic and complete data expressly for the use of this inst.,” which was most prob. entirely untrue.

At a later period an “Orphans and Childrens Endowment Branch” was estab. We shall speak of some of the tables for this branch under ENDOWMENTS. Mr. E. R. Foster was “Resident Director,” and Mr. Andrew Francis was Sec.

In 1865 the bus. of the Co. was trans. to the *Briton Medical and General*.

BRITANNIA LIFE INS. CO. [No. 3.] was projected in 1868, with a proposed cap. of £100,000. Mr. J. A. G. Merrington and Mr. James Beal were two of the regis. promoters. Mr. Gavin was the Man. We are not aware if the Co. be still in existence.

BRITANNIA MUTUAL L. ASSO. [No. 2.], founded in 1839, under the title of the *Standard of England*, and under the authority of *Letters Patent*, granted in pursuance of Act 7 Wm. IV. and 1 Vict. c. 73, passed in 1836. This is one of several ins. asso. which obtained powers of this class. [LEGISLATION FOR INS. ASSO.] The Co. was restrained by the *Standard* (1825) from retaining its original title. It had been founded as a “mixed” office, but on the change of name became entirely mut. The prosp. said :

It is an estab. principle that in a mut. assu. so. a yearly valuation of the liabilities is of essential importance to its security; whilst at the same time it enables the members to participate in the profits at a much earlier period, and to a far greater extent than would be otherwise safe or practicable. Such system has accordingly been adopted in this Asso.

Then there was a great parade about the half-credit system; and finally the following announcement:

The *Britannia Mut. L. Asso.* is altogether distinct from and independent of the Proprietary office transacting bus. under the name of the *Britannia L. Assu. Co.* The only connexion between the two estab. is that their affairs are conducted on the same premises, and by the same officers; by which means the entire disbursements of the Mut. Asso. are reduced to a small per-centage on its receipts; and thus the large expenditure of a separate estab., which generally entails a heavy burthen on the members during the infancy of such sos., and interferes materially with a due apportionment of the early profits, is to great degree avoided.

The Asso. absorbed the businesses of the following offices: in 1843 that of the *South of England*; in 1844 that of the *Lond. and Westminster Mut.*

In 1865 the bus. of the Asso. was trans. to and united with that of the *Briton Medical and General*. The Resident Director of the Asso. was Mr. E. R. Foster; the Sec. Mr. Andrew Francis.

BRITISH ALLIANCE FIRE, LIFE, AND CATTLE ASSU. CO., projected in 1853, but nothing came of it beyond prov. regis. It proposed to transact fidelity guarantee bus. also.

BRITISH ALLIANCE FIRE, LIFE, AND GUARANTEE INS. CO., projected in 1868 by Mr. [the Rev.] Edwin Yelland, with a proposed cap. of £100,000 in shares of £1. The Co. appears to have passed through several stages of transformation. It was regis. under the title given above. In an early prosp. it was designated “The British Alliance Assu. Corp. Lim., with which is incorporated the *Unconditional Assu. Co.*” This prosp. contains several features which we must notice:

Commercial Travellers' Assurances.—An arrangement has been made by which the interests of this influential body have been specially considered. By assuring their lives, commercial gentlemen may secure to their widows liberal annu., or they can themselves receive an allowance while out of employment, or during temporary disablement. And should they live to a certain age, they may secure an annu. of from 9 to 14 p.c. on the sum assu., according to their age at the time when the annu. is entered upon.

Annuities for Clergymen.—This is an especial system expressly introduced for the benefit of aged ministers or their widows. While secure for the office, it gives the minister of religion advantages never before conceded, but which this office will fully develope, in a manner peculiar and valuable.

Educational Annuities.—A system by which, after 8 or more small annu. payments, parents will be entitled to receive the amount of £10 and upwards, for a period of 6 years, either for school or college purposes. This most desirable arrangement secures to children a liberal education, however limited the means of the parent, and by a proper application of it, the largest family can be educated at the least inconvenience. Should the child die before the annu. commences, the whole of the money paid will be returned.

Then, under the head of "Marine Assu. Branch," there is the following announcement :

Marine Assurances.—Officers of all grades of H.M. Royal Navy, or in the Mercantile Marine Service, can assure upon a new system, whereby all extra prem. for risk of sea service is abolished, and the ordinary home prem. alone charged.

And under "Building Assu. Branch" the following :

This branch of the Co.'s bus. has been estab. to supersede and remedy the defects of building sos. generally, and also to embody in one simple system the advantages of those sos., and the security of life assu. in connexion with them.

It was further announced that "the surplus income and cap. will be invested as per building tables, and by advances to policy-holders upon undoubted *personal security*, thus obtaining a large amount of profit on the working of that cap., and preventing any loss arising to the Co. from placing the money in *questionable* undertakings." There was another scheme for "reduction of debt upon places of worship," but the plan upon which it was to be worked was not stated in detail.

It is difficult to determine whether all these announcements were made in good faith or otherwise. We observe that the name of the Act. of the Co. is not stated on the "proof prospectus" in our possession. We record them chiefly on account of their novelty.

On the prosp. Mr. Yelland was styled "Managing Director;" Abiather P. Wall, M.D., "Medical Director;" and Messrs. Vallance and Vallance were announced as "Solicitors;" and here the "legal hist." of the enterprise commences. These last-named gentlemen, as soon as they found themselves so pub., filed a bill in Chancery against the directors, and obtained a decree prohibiting the use of their names.

The next stage was that in Aug., 1848, the Man. Director found himself at the Guild-hall Police Court, having been apprehended on a warrant, charging him with obtaining various sums of money by means of false pretences : to wit, £100 from Dr. Bartlett, on the promise that he should be appointed a medical officer of this Co. ; £200 from Mr. Winscomb, on the promise that he should be appointed Sec. of the Co. at £500 p.a. ; £100 from Mr. Donaldson, on the promise of appointing him Chief Clerk of the Co., and £50 from another gentleman who was to be appointed Sol. of the Co. After several hearings and adjournments, the prosecutors somewhat abruptly withdrew from the charge. It was stated that Mr. Yelland had agreed to repay the money he had obtained ; and so it appeared that the object of the prosecution had been accomplished. The Co., however, had received its death-blow.

By the art. of asso. Mr. Yelland was to have received various sums for preliminary expenses, and promotion money, viz. £300 in cash and £600 in fully paid shares within 28 days after first allotment ; and in 6 months thereafter the further sum of £350, and a further £350 in 12 months (sec. 146). By the 103rd sec. he was appointed Man. Director at a salary of £500 p.a.

BRITISH ALMANAC.—See COMPANION TO BRITISH ALMANAC.

BRITISH AMICABLE LIFE OFFICE, founded in 1857, and in the same year its connexions were transferred to the *General*.

BRITISH ANNUITY CO., founded in 1824, with an authorized cap. of £3,000,000, in 60,000 shares of £50. The hist. of this Co. presents some remarkable features. Its bus. was not to *sell*, but to *purchase* annu., i.e. to make advances repayable by means of annu. Hence the requirement for such a large cap. A Deed of Sett. was prepared containing regulations for the management of the affairs of the Co. A Mr. Van Sandau, a well-known Lond. sol., had applied for and obtained an allotment of shares. When called upon to sign the deed, he refused to do so, on the ground that it contained provisions inconsistent with the adv. and prosp., on the faith of which he had become a partner in the concern ; and being, as he alleged, generally dissatisfied with the mode in which the affairs of the Co. were being carried on, he filed a bill in Chancery against the Chairman, Mr. Moore, seeking to be relieved of his shares.

In the mean-time the Co. had obtained a special Act of Parl., 5 Geo. IV. cap. cliii.—*An Act to enable the British Annu. Co. for the Purchasing of Annu., under certain regulations to sue and be sued in the name of the Chairman and Sec. for the time being.* This Act received the Royal assent 21 June, 1824. It declared that the Co. was not incorp., or the shareholders discharged from any responsibility as individuals.

It was prob. in view of this provision of the Act that Mr. Van Sandau filed a second bill, this time against *all the shareholders*. The number of these had been limited by the D. of Sett. to 500, but they were actually only 300. He alleged in this bill that no time having been orig. prescribed for the duration of the partnership, it was dissolvable by notice at the pleasure of any of the partners. He had accordingly on the 30th April, 1825, sent a notice of dissolution to the Sec. and Sol. of the Co. Finally he prayed that the Co. might be dissolved and proper accounts taken.

To this bill 14 of the Directors appeared and filed separate answers, with long schedules to each ; and the Court held [*Van Sandau v. Moore*, 1826] that the defendants could not be compelled to answer jointly, and that there was no reason in fact why the whole 300 shareholders might not answer separately. The result was that it became impossible to proceed with a suit in which the plaintiff, as a preliminary measure, might have had to pay for copies of 300 answers, each with a long schedule. The plaintiff in fact was most com-

pletely and effectually caught in the trap he had set for the Co. and was obliged to abandon the suit. Mr. John Wilks, jun., son of the John Wilks of political notoriety, was the Sol. of the Co.

The Co. carried on business down to 1848, when its affairs were placed in order for winding up. Mr. James Mitchell, LL.D. was Sec. of the Co.

BRITISH APOLLO MARRIAGE INS. OFFICE, "Bolt-court, Fleet-street," founded in 1710, for securing marriage portions, etc. There appears to have been another office of the same name, situate near the Horn, Bread-street, Radcliffe, founded in the same year, and for the same class of business. Each is spoken of in our hist. of MARRIAGE INS.

BRITISH ASSU. CO.—This Co. was founded in 1847, under the title of the *Architects, Civil Engineers, Builders, and General F. and L. Ins., Annu., and Rev. Int. Co.* In 1850 its name was changed by authority of a special Act of Parl., 13 & 14 Vict. c. x.—*An Act to change the name of, etc., and for other purposes relating to the Co.* This Act received the Royal assent 17th May, 1850; but the Co. was not to be released from the provisions of the Joint-Stock Cos. Regis. Act. We have already given some account of it under its orig. name. Its return of F. duty in 1848 was £1029. In 1851 it was £2666. About £350,000 of the cap. was subs. The F. bus. was not attended with success; and the L. bus. was small. In 1852, or early in 1853, the connexions of the Co. were trans. to the *Lancashire*. The acceptance of lives in impaired health was a feature of the L. department. In the F. department ins. were granted for loss occasioned by "buildings being rendered untenable by fire."

BRITISH ASSU. SO.—An asso. under this title was founded early in the present century. Its office was in Aldersgate-street, but its general features were rather those of a benefit so. than an ins. office.

BRITISH, AUSTRALIAN, AND GENERAL MARINE, LIFE, AND FIRE ASSU. AND LOAN SO., founded in 1840, with an authorized cap. of £1,000,000, in 50,000 shares of £20. The prosp. says :

It is proposed, then, to unite the branches of Marine, L., and F. assu., etc., and other business usually undertaken under any of the above departments; and its object has reference to Australia as well as Gt. Brit.; an office being intended to be estab. in Sydney upon quite as important a scale as the head office of the So. in Lond., and to be governed by its separate board of directors. . . .

With regard to the *Marine* department, it is only necessary to call attention to the fact that our Australian possessions are rapidly increasing in importance, and their agents are daily spreading all over the globe; large consignments are made, not to England only, but to China, the East Indies, and other parts; and a very considerable part of such exports are entirely at the risk of the merchant, owing to the excessive prems. hitherto demanded by existing cos.

The *Fire* assu. will be confined exclusively to Australia.

. . . The rates of prem. charged are understood to be 5s. 6d., 7s. 6d., and 12s. 6d., which are considerably higher than the charges to which competition has reduced them in this country. . . .

Moreover, another great and decided advantage which this Co. will have over others, will be in the investment of a portion of its surplus funds in Australian securities; and as a highly profitable and sure investment of cap., even this feature alone would recommend the shares to the public, seeing that on landed property of daily increasing value, the usual rate of int. on the best mortgage in Australia is 12½ p.c., which in this country scarce obtains 4.

A portion of the shares will be reserved for allotment in Australia. . . . Pol. will be granted as low as £20. . . . A charter will be applied for as soon as the So. shall be firmly estab. . . .

This was the programme of operations laid down. We do not discover, as a matter of fact, that the co. ever did commence bus.; although we find it stated in the prosp. :—

"The arrangements being sufficiently advanced, the directors beg to announce that they propose commencing bus. on 10th March next." Mr. John Cobon was announced as Sec.

BRITISH COLONIAL, BANK, AND LOAN.—This scheme, which had intentions to graft on the bus. of L. ins., was projected in 1845, but died at that stage.

BRITISH COLONIAL INS. CO., founded in 1838, and in 1842 it ceased to carry on bus. We have not been able to meet with any accurate details concerning it.

BRITISH COLONIAL AND FOREIGN LIFE ASSU. CO.—This Co. was promoted in March, 1852, by Mr. William Carpenter, a literary gentleman, who wrote some pamphlets on ins. topics. In the month of May, same year, the directors regis. their withdrawal from the project. See ENGLISH AND COLONIAL.

BRITISH AND COLONIAL INDISPUTABLE.—This Co. was projected by a Manchester gentleman in 1852, but made no progress.

BRITISH AND COLONIAL LIFE AND INVESTMENT CO., projected in Lond. in 1864, with a proposed cap. of £250,000. Mr. Thomas Withcomb was the first regis. promoter. We do not discover that the enterprise made further progress.

BRITISH AND COLONIAL PROVIDENT LIFE ASSO., ANNUITY, ENDOWMENT, AND FREEHOLD INVESTMENT CO.—This Asso. was projected in 1845, but did not survive the honours of prov. regis.

BRITISH AND COLONIAL TRUST AND ASSU. CO.—A Co. under this title was projected in Lond. in 1846. Its proposed cap. was £500,000, in 10,000 shares of £50. The advertised patron was His Royal Highness the Duke of Sussex; among the trustees were the Earl of Thanet, the Earl of Lovelace, Lord Vaux, Lord Lovat, and 5 others. The Chairman was W. Hutt, M.P., afterwards President of the Board of Trade; among the directors was Rowland Hill, and many other well-known names. The Auditor and Consulting Act. was Augustus De Morgan; while the Act. and Sec. was Alexander Jamieson, LL.D. The prosp. said :

This Co. intends, for the first time in this country, to combine with the bus. of L. assu. in all its branches, that of the *Administration of Trusts*. Trust cos. prevail extensively through the U.S., and have been found productive of the greatest advantages. The object is to substitute a public body for individuals in the execution of trusts. . . . That which is a man's *business* is generally well and diligently done. At present the execution of a trust is not regarded as a bus., and is consequently too often performed in a slovenly and imperfect manner. . . . All these hazards and inconveniences are obviated by resting the trust in a public body. . . .

Into the ins. department every improvement will be introduced which is suggested by equity, and has received the sanction of experience; the intention being to multiply the inducements to ins. by dispensing with restrictive conditions, or clauses of forfeiture unnecessarily severe, and by offering increased facilities in the effecting and realizing of pol. It is also proposed to extend the principle and benefits of L. assu. by affording the means of providing against other contingencies besides that of the death of the assured, by placing at his disposal a fund, which may be available on any emergency or for any purpose—such as the portioning or advancement of children—the extension of bus.—temporary sickness and the like. With this view it is intended to grant deferred annu. on strictly equitable terms, and to regard the aggregate payments, whether upon a life pol., or for the purchase of a deferred annu., as a fund standing to the credit of the pol.-holder, which may at any time be converted into a fair equivalent in some other shape, or be made available as a cash credit account for a reasonable advance from the Co.

Then the following regulations regarding foreign travel were in advance of those usual at that period :

Pol. will not necessarily be forfeited by passing beyond the seas ; but such regulations will be adopted as may reconcile the protection due to the Co., with a fair consideration of the interests of the assu. The usual trips either to the adjacent islands or to the continent of Europe will not be considered as varying the ordinary risk . . . ; but if the party whose life is ins. shall depart beyond the limits so prescribed, or go from the U.K. to any country which is the theatre of war or civil tumult, or in which any pestilential disorder shall be then prevailing, the pol. will be forfeited, unless before the day of the next periodical payment, or the death of the party assured, if it should first happen, notice shall have been given to the office of such departure or visit, and the add. prem. required for such extra risk duly paid.

We do not find that this Co., with all its influential names and novel features, ever got really to work. We have been informed that a Co. of the same name was founded in 1838, and died out in 1849 ; but we find no trace of it.

BRITISH COMMERCIAL INS. CO., for the protection of trade, founded in 1820, with an authorized cap. of £1,000,000, in 20,000 shares of £50. The objects embraced in the orig. "proposal" were: *The ins. merchants, manufacturers, and tradesmen, for losses by the bankruptcy or insolvency of their debtors.* Also for ins. on lives ; for the sale and purchase of annu. ; the receiving of investments in order to a trading cap. ; the endowment of children ; the redemption of mortgage ; and the estab. of a widows' and orphans' fund, solely for the relief of the indigent families of those who shall have been proprietors, assurants, annuitants, or investors in the funds of the Co.

Under the head of *Ins. against Losses in Trade*, the prosp. said :

The first object of the Co. being to provide a remedy against the present depression of domestic trading of the country, by the revival of credit ; it may be necessary to state that the calculations of the Co. have been made from positive authorities, and upon the broadest basis of inquiry. They have been made with the certainty of a fair and honourable profit to the Co., which consideration cannot fail to operate in gaining the confidence of the insurer, for it is only in the profits of the Co. that the security of the public can be maintained.

Pol. may be effected with the Co. by merchants, manufacturers, and traders, to ins. against losses in trade by the bankruptcy or insolvency of their debtors, by ann. prem. on the average amount of their running credits, or by ins. on life. The rates of ins. may be referred to in the proposals of the Co., distinguishing the several risks of credit, in common ins., hazardous, and doubly hazardous.

These rates will be given under head of **COMMERCIAL CREDIT INS.**

Deposits were required to be made by intending life insurers : 5s. on £100 proposal ; 10s. between £100 and up to £500 ; and £1 between £500 and £1000. If proposer declined to complete, deposit to be forfeited ; if Co. declined to accept, to be returned.

The distinctive feature of the L. branch was that very low rates of prem. were charged, there being no profit or bonus scale: Whole life rates, age 15, £1 9s. ; 20, £1 15s. ; 25, £2 ; 30, £2 5s. ; 35, £2 11s. ; 40, £3 ; 45, £3 10s. ; 50, £4 6s. ; 60, £6 7s. 4d. ; 67, £8 12s. 1d.

In the *Deposit* department tables were given showing the amounts to be withdrawn at given periods by deposit of 2s. 6d. weekly ; £2 11s. quarterly ; or £100 paid down. [DEPOSIT INS.]

The Co. had a *Fire* branch. It returned in Gov. duty, in 1824, £2985. In the following year this branch of its bus. was trans. to the *Protector F.* The cap. appears then to have been reduced to £600,000, of which £90,000 was paid up.

In 1832, by 2 & 3 Wm. IV. c. xxxviii., the Co. was enabled to sue or be sued in the name of one of the Directors or Sec. Its bus. at that date appears to have been confined to life, annu., and endow. for children ; and it then granted parti. life pol. Diseased lives were ins. at special rates.

In 1847 the above Act was repealed, and other provisions made, by 10 & 11 Vict. c. lxxxiv. The Co. might thereafter be sued in the name of one its Directors, or the Sec. for the time being.

In 1850 the Co. issued 371 new pol., the new prem. thereon being £6592. The claims paid amounted to £31,893. The prem. received on these same pol. had been £30,655. The profit by lapsed pol. was estimated at £13,600. The assets of the Co. were stated to amount to £249,711, exclusive of £510,000 of subs. cap.

In 1854 the Co. made a deposit of \$100,000 in the State of N.Y. and commenced to transact bus. there. Mr. Geo. M. Knevitt was the agent.

In 1860 the Co. was amal. with the *Brit. Nation*. In 1865 the last-named Co. amal. with the *European*. In 1871 the *European* passed into liq. We observe that there is now [June, 1872] before the Court of Chancery a petition for winding up the *Brit. Commercial*.

Mr. Ebenezer Ferine had been Man.-Director of the Co. for many years, and remained so up to the date of amal.

BRITISH COMMERCIAL INS. [No. 2], founded at Plymouth in 1872, with a proposed cap. of £5,000,000, in 500,000 shares of £10, for the purpose of carrying on the bus. of accident, fire, and marine ins. The founder of the Co. is the Chevalier Harry Clench, who subs. for 3000 shares, giving him a stake of £30,000 in the enterprise. Two of the other promoters, Mr. W. E. Hicks, and Col. E. C. Warner, subs. for 1000 shares each. Mr. Clench to pay all expenses of formation of the Co., and to be entitled to £1 2s. p.c. on nominal cap., or in all, £55,000. The directors are each to receive 100 fully paid-up shares as part of their first year's remuneration.

BRITISH AND CONTINENTAL GUARANTEE AND INDISPUTABLE LIFE POLICY Co., projected in 1852, but never got beyond prov. regis.

BRITISH EMPIRE LIFE ASSU. Co. [No. 1] founded in 1839, with an authorized cap. of 500,000, in 20,000 shares of £25. The head office was at Whitehall, with a branch in the City. The Board of Direction included many influential names; and the various office bearers were men of position. The full title of the Co. appears to have been: *The Brit. Empire Assu. Co. for granting Assu., Loans, immediate and deferred Annu. for the purchase of Annu. and Rev. Interest, and Assu. of Pensions to officers in the service of Her Majesty and the Hon. East India Co.* The orig. prosp. said:

Naval and military officers and others may assure with this office upon a general rate of prem., which shall cover risks of all climates and actual warfare—an advantage never before offered by any assu. office; and facilities will also be given to military men, who effect life assu. with this Co., for advancing their interests in the army.

The directors also, from possessing accurate data of the mort. of Europeans who have resided in India from 1760 to the present time, have had rates of prems. computed for the true risk of life at each of the presidencies, and which will be found more moderate than any yet offered to the public for the purpose of effecting life assu.

The Co. will grant *pensions* and annu. immediate, deferred, or survivorship; thus affording to civilians, officers of the army and navy, and the Hon. East India Co.'s service, an opportunity of securing a provision for themselves at a given period, or at their decease, to their widows, families, or relatives; which pensions will be found of the most liberal character, consistent with the perfect security of the Co.'s funds.

Half-credit pol. were issued to lives not exceeding 55. The period of credit extended to 7 years, int. at 5 p.c. being paid in advance. Lieut.-Col. Henry Dundas Campbell was Resident Director; Mr. Alexander Jamieson, LL.D., was Act.

About 1843 the Co. underwent some re-organization. Mr. Geo. Bicknell became Man. Director, and Mr. Sydney Crocker became Sec. Among the "advantages" then offered was the following, which we regard as an ingenious expedient for replenishing a failing exchequer:

Assurers, who may wish to release themselves from the trouble and anxiety of ann. payments, and from the danger by neglect of lapsing the pol., may deposit any principal sum with the Co. at an int. of £4 p.c., on condition that the int. be applied in the payment of the prem. for such sum as it will assu., according to the age of the party. Thus, a person, aged 26, wishing to assu. £1000, by depositing £500 will be entitled to the int. of £20, which sum, at £2 p.c. (the prem. at 26), will assu. the required amount. The deposits may be withdrawn at any time, on giving 6 months' notice, and the parties will be free, as in ordinary assu., to discontinue their pol. if they think proper.

In 1845 the bus. of the Co. was trans. to the *Licensed Victuallers*, afterwards *Monarch*.

BRITISH EMPIRE MUTUAL FIRE ASSU. So., founded in 1848, on the *Mutual* principle; and was worked in connexion with the *British Empire Mut. Life*. The fire duty return progressed as follows: 1848, £624; 1850, £2095; 1855, £6272. Mr. W. S. Gover was Sec. In 1857 the bus. was trans. to the *General*.

BRITISH EMPIRE MUT. LIFE ASSU. Co. [called for distinction, *Brit. Empire No. 2*], founded in 1847, on the purely Mutual principle, without any subs. cap.; but there was authority to raise by way of loan for the purposes of the Co. (if required) the sum of £20,000. No portion of such sum has been required. The objects of the Co. were (1) Life Ins. in all its branches, (2) Loans, (3) Fidelity guarantee. We believe this last branch of bus. has never been carried on by the Co. Being constituted on the purely mut. plan, the asso. should have been termed a so. and not a co. We shall speak of it as a so., except when we quote official documents.

By the Deed of Sett. dated 26 Jan., 1847, the participating pol.-holders for the time being were to constitute the So. Claims on the So. were to be paid 2 months after proof, with a proviso that "whenever a sudden increase of deaths shall happen from any cause, it shall be lawful for the Co. to defer, so long as circumstances may render it necessary or expedient, the payment of any proportion not exceeding in the whole 3 equal 4th parts of the whole sum which under any assu. made by the Co. may become payable upon any death." The sum deferred to bear interest at 3 p.c. p.a. Each pol. to contain a provision exempting the directors signing it from any personal liability. First

distribution of profits in 1852, and afterwards triennially. The Directors are not to make, accept, or indorse notes or bills. The Deed is carefully and considerably drawn.

We believe the So. owed its origin to the late Mr. Watson, who was for many years Chairman of the "Sunday School Union."

In Nov. 1851, an extraordinary general meeting was held, with a view of modifying several points in the constitution of the So. It was necessary, under the Joint-Stock Cos. Regis. Act., 7 & 8 Vict. c. 110, under which the So. was constituted, that the names and addresses of all the members, *i.e.* of all the parti. pol.-holders, should be regis. every half-year, the cost of which was then about £100 for each return, and would increase as the So. increased. Then the deed provided that 50 p.c. of the profits should be retained for a certain period to constitute a reserve fund. It was proposed to modify this by setting aside 10 p.c. of the profits for a time, and afterwards 5 p.c. This would enable the So. in due course to comply with the bonus regulations of the deed. The changes were resolved upon.

In 1852 the So. obtained a special Act of Parl., 15 & 16 Vict., c. liii.—*An Act for the better regulation of the Brit. Empire Mut. Life Assu. Co., for enabling the said Co. to take and hold property; and for other purposes relating to the said Co.* The Act provided that the So. should remain subject to the provisions of the Joint-Stock Cos. Regis. Act, except as to the returns to be made to Joint-Stock Cos. office. The Act also provides that a "regis. of members" shall be kept, "with an alphabetical index thereto, and in such book shall be fairly and distinctly entered from time to time the names of the several corporations, and the names and addresses of the several persons who are members of the Co." The same to be authenticated from time to time by the common seal. Every member and other interested person may search this register.

This So. has been regis. under the Cos. Act, 1862, in conformity with the 209th sec. of that measure, which does not require any co. completely regis. under the 7 & 8 Vict. c. 110, to deliver to the Regis. any copy of its deed. The 13th sec. of *Life Assu. Cos. Act*, 1870, provides that every co. which is *not* regis. under Cos. Act, 1862, shall cause its deed to be printed, and furnish a copy to any share or policy holder for a sum not exceeding 2s. 6d. By reason of this state of things, this Co. (in common with any other so placed) is not called upon to print and supply its deed. The So. does not take any technical advantage of this bungle in the Act of 1870, although it is fairly entitled to stand upon its exemptions.

During the "ins. controversy" in 1852-3, this Co. sustained some very unjust treatment, in having its necessarily heavy expenses of foundation heralded forth to the world as an almost certain sign of impending insolvency. The So. need not be ashamed to have the figures of that period reproduced. During the four years ending with 1850, the So. had received in prems. £33,348, and had paid in claims £1670, being 5 p.c. of the receipts; while its entire expenses amounted to £14,466—being 52 p.c. of its entire receipts; total expenditure 57 p.c. of prems. By means of this expenditure the So. had secured a well-selected bus.; and its subsequent financial hist. has been increasingly satisfactory.

In 1854 a secession occurred in the ranks of the So. Mr. W. S. Gover, who had been its Sec. from the commencement to that date, retired to found another office; one of its directors also retired. But by this period the So. had become firmly estab.; and the change did not affect its success.

In its early years the So. charged a reduced rate of prem. for the ins. of *female* lives. This practice has now been for some years discontinued. [FEMALE LIFE.] We shall speak further hereon under BRIT. EMPIRE MUT., MORT. EXPERIENCE OF. The So. ins. "doubtful lives." [DISEASED LIVES.] It also grants BUILDING SO. INSURANCES.

The So. is under sound and careful management, and continues to prosper. The report for the year 1871 discloses the following figures: New proposals *accepted* during the year 830, ins. £234,547; new prems. thereon, £7363. Total income of year, £103,792; claims (including bonuses), £52,348. Total claims paid from commencement of So., £473,856. Total profits distributed, £242,156. The accumulated funds, £488,310. The following are the leading land-marks in the progress of the So.:

1849	...	Income	...	£10,265.	Accumulated fund	...	£6,199.
1856	...	"	...	£51,389.	"	...	£110,000.
1863	...	"	...	£74,660.	"	...	£274,681.
1871	...	"	...	£103,792.	"	...	£488,310.

The present Sec. is Mr. A. L. Saul; Act. and Accountant, Mr. Josiah Martin. Much of the success of the So. in the provinces is due to the indefatigable exertions of the Agency Superintendent, Mr. M. B. Sutton.

BRITISH EMPIRE MUT., MORT. EXPERIENCE OF.—In 1865 there was pub. *A Contribution to the Medical Statistics of Life Assu., with Hints on the Selection of Lives*, by John Mann, M.R.C.S., "Examining Surgeon in the Brit. Empire Mut. Life Assu. Co." The author says:—"From the commencement of the B. E. Life Assu. Co., I have wished to gather the materials for such a report of its first 10 years, which is now accomplished." The author does not, however, present any connected report of the experience of the So. in such a form as can be presented to the reader at one view; but he analyzes the experience

of several other offices, and states the experience of his office, by way of confirmation or contrast. We shall have occasion to quote these disconnected passages from time to time.

The So. has, at a more recent date caused its experience to be very carefully collated. We trust the results may be pub. for the general benefit of life ins. interests.

BRITISH EQUITABLE ASSU. CO., founded in 1854, with an authorized cap. of £100,000, in 1000 shares of £100, with power to increase to £500,000. The cap. now stands at £250,000, in shares of £100. The Co. was regis. under Joint-Stock Cos. Regis. Act, 1844. By the 17th sec. of the Co.'s Deed, the liability of shareholders ceases immediately on trans. or forfeiture of shares. The arrangement as to shareholders parti. in profits is a very equitable one; current int. on paid-up cap. is paid out of general funds, into which int. on investments is carried. The profits to the shareholders beyond is derived exclusively from pol. in the non-parti. branch. The general scheme of profits is regulated by the bye-laws of the Co. under the authority of the Deed. The bonus division takes place every third year; and by the above arrangement the parti. pol. secure all the advantages of a mut. office. Bonuses may be applied to making the pol. payable during lifetime of insured.

The Co. was founded by Mr. William Sutton Gover, the present Man. Director and Act., on the occasion of his secession from the *Brit. Empire Mut.* His appointment as Man. is contained in the 46th sec. of Deed. The Deed is dated 15th July, 1854. It contains no clauses requiring comment beyond those already noted.

The Co. ins. "declined," *i.e.* DISEASED LIVES; and it has an "advance department." It also issues non-forfeiture pol., on the "ten-prem. plan;" and "settlement pol."

The progress of the Co. has been on the whole very satisfactory, and it is now firmly estab. Its new bus. in 1871—17th year of its existence—consisted of 1934 pol., ins. £320,319, and yielding in ann. prem. £9820; claims by 172 deaths, £28,487, including bonuses; total claims from commencement, under 1173 pol., £187,558; surrender values paid, 1871, £1777; total pol. in force, end of 1871, 17,009, ins. £2,930,210; ann. prem. thereon, £93,998; total accumulated fund, £273,073. Mr. John Wilkinson Farey is the much-respected Sub-Man. of the Co.

BRITISH EXCHEQUER LIFE ASSU. CO., founded in 1856, with an authorized cap. of £100,000, in 20,000 shares of £5. Mr. Wm. Waite was Man.-Director of the Co.; Mr. Alexander Colvin, Act. and Sec. The prosp. said:

Formerly the system [of L. ins.] was but little understood, and its advantages were principally confined to the more wealthy classes of society; the great bulk of the people were in utter ignorance of its vast capabilities, and until recently no extraordinary efforts were made to popularize and bring these advantages within the reach of the middle and industrial classes, who in fact stood most in need of assistance. . . . It would appear almost incredible that so many thousands, and hundreds of thousands of persons, whose means will admit of their doing so, have omitted so important and sacred a duty. It is believed that up to the present time there are not more than 200,000 who have availed themselves of the advantages of life assu. for family purposes; this seems more remarkable and unaccountable, *since the death of every 1000 husbands in the middle and lower ranks leaves behind them at least 4000 women and children in penury and distress, if not absolutely want.*

The distinctive feature of the Co. was that whole-term insurers on the "withdrawal scale" [a table of prems. about 10 p.c. higher than ordinary life prems.] might at any time withdraw *one-half* of the prems. paid on the pol., paying 5 p.c. int. for the loan, and giving no security beyond an indorsement of the pol. After payment of 5 prems. a parti. pol.-holder was entitled to receive a *free pol.* for the entire prems. paid. In 1868 the bus. of the Co., which was very small, became united with the *Brit., Foreign, and Colonial.*

BRITISH FIRE ASSU. OFFICE, founded towards the close of the last century, the date most commonly named being 1799; but we are disposed to attribute it to some three or four years earlier, for reasons which will presently appear.

On the occasion of the promoters of the *Globe* applying for a charter in 1799, this Co. petitioned against the same. From this petition we take the following clauses, which embody in the main the early hist. of the office:

That your petitioners several years ago estab. a So. or Co. called the *British Fire Ins. Co.*, for ins. against fire within the U.K. of Gt. Brit. and Ireland, and all other parts and places within His Majesty's dominions, upon an ample capital, and made themselves also responsible for all payments which might become due under their policies, without any charter, or any reservation or limitation between themselves and those amongst the public who should insure with them.

That your petitioners humbly conceive, that if the said bill should pass into a law, it will be a great prejudice to the interest of your petitioners, by giving the said intended Co. various privileges and advantages over your petitioners, who have, after the most persevering labour and assiduity, at a very great expense, and with an ample capital, estab. an undertaking for carrying on the bus. of F. ins. within the U.K. of Gt. Brit. and Ireland, and elsewhere within His Majesty's dominions, by means of which, and other present existing offices, the merchants and manufacturers *have been supplied with ins. to the full extent of their wants, and that at the lowest terms which can be afforded, with reasonable profit to themselves, and security to the public.* And the proprietors of agricultural stock throughout the kingdom have been materially benefited both in the rates and modes of insuring that species of property; and your petitioners have paid large sums of money in consequence of such ins.

That in every considerable town in the kingdom there are offices under the direction of your petitioners for making F. ins., and in several of which towns your petitioners have contributed very considerable sums for the estab. of fire engines, and other means of protecting the property of individuals.

In 1805 the Co stood 5th on the list of F. offices as to amount of duty collected, the amount being £18,744.

In 1814 the Co. obtained a special Act of Parl., 54 Geo. 3 c. 178—*An Act to enable the Brit. F. Assu. Office to sue and be sued in the name of their Sec.* There are no features in this Act calling for special remark.

In 1824 the F. duty return of the office was £17,606; from that period it steadily declined until 1838, when it began to revive. In 1840 it reached its highest, £18,488. In 1843 the bus. of the Co. was trans. to the *Sun*. Mr. John Helps was for many years Sec. **BRITISH FIRE PREVENTION AND INS. CO.**, "for affording to the public increased protection against F. in connexion with F. ins.;" and specially "for taking up the large F. bus. obtainable through agents of L. offices." The proposed cap. of the Co. was £500,000, in 100,000 share of £5. This was the first F. office projected under the "Companies Act, 1862." In furtherance of the object set forth in the second head above quoted, there were on the board of the Co. a director from the *Amicable*, another from the *Eagle*, one from the *Albert*, and another from the *Western*. The Man. and Sec. was Mr. J. E. B. Curtis. The prosp. said:

The existing F. office system is defective in two respects. 1. It offers no assistance to the assured in protecting *themselves* against fire. 2. It does not assess risks with sufficient minuteness, and therefore in some cases charges unnecessarily high rates, while in others the rates are not sufficient to cover the risks incurred. The present Co. seeks to remedy these deficiencies. . . .

It appears therefore that by the use of an effective means for extinguishing fires, available within the first 5 minutes, and not causing damage in use, a proportion of the present losses, equal at least 66½ p.c., and prob. approaching 80 p.c., might be saved, at the cost only of the means required to produce this result.

The scheme of the Co. was to introduce the use of *Phillips' Patent Fire Annihilator* by its pol.-holders, as the best known means of protection. The prosp. said hereon:

It has been ascertained by a careful calculation that the instruments can be supplied in cases where the sum assu. is not very small, at a cost much within the margin of saving shown by the estimate given above, *and arrangements have been made by which the right to use them with all improvements is secured to the Co. on advantageous terms.* They will, therefore, form the means principally relied on at present for affording increased protection against fire. The Co. will not however be restricted to their use; other improved means will be applied for preventing and extinguishing fires whenever the directors are satisfied that the application can be made advantageously.

The Co. did not however intend to rely entirely upon the use of fire annihilators. The prosp. says:

In connexion with fire prevention it is proposed to introduce a more careful *classification of risks*; superseding the system of arbitrary distinctions as to what is to be assessed as dangerous or hazardous, by scientific discrimination, carried even to individual cases—with this object a large amount of statistical and other information on the subject of fires has been collected, collated, and tabled, *giving the actual risk in each trade.*

It was asserted that an accurate knowledge of risks, and an equitable assessment of rates, would protect the interests of the office, and at the same time do justice to the insured. The prosp. continues:

Subject to the improved classification of risks, it is not proposed at present to depart from the usual rates charged for ins. against fire; but the proposed plan will offer increased advantages to the insured and the shareholders. The insured will benefit: 1. By obtaining, without any increase of cost, a simple but effectual protection against fire. 2. By the reduced cost of ins. consequent on the reduced risk, and made available to the insured by bonuses or other equitable arrangements made with a due regard to the interest of the shareholders. The shareholders will benefit by the increased profits to be realized by the diminution of loss.

A direct interest in the profits will be given to the *agents*, in order to stimulate their exertions in promoting and extending the bus.

The scheme was most elaborate in its details, and it received high commendations from the press; but its promoters appeared to lack that practical knowledge which alone can secure bus.; and the enterprise collapsed.

BRITISH, FOREIGN, AND COLONIAL ASSU. ASSO., founded in 1857, with an authorized cap. of £100,000, in 20,000 shares of £5. This Co. was founded by Mr. T. H. Baylis immediately after his return from Australia. It embodied a scheme called "Life Assu. Classes," which was in fact a "lottery." But we must fall back upon the prosp.:

Important! The difficulties of life assu. removed, and its benefits rendered accessible to all. . . . Distinctive advantages of the assu. classes. In effecting life assu. through the classes of this Asso., the following important advantages are presented to assurers: 1. No medical examination, or references to private friends, as to health, habits, or personal hist. are required. 2. Only one small prem. contribution is necessary. This is instead of a heavy ann. prem., as usual in ordinary life assu. 3. Some of the pol. are fully paid up; their holders having nothing more to pay. These pol. are convertible securities, and available immediately, either for the purposes of sale or borrowing. 4. Males or females, or both, whose ages range between 6 and 65 years, are eligible as members. 5. Each class consists of 50 members. Persons may enter any class, by paying the prem. contribution indicated by the tables. As soon as a class is formed, notice is given to the members of the time and place appointed for the election, and every member is invited to attend, or to send some one to represent him or her. 6. Members incur no liability whatever.

This is the brief outline of the scheme, as first presented by the prosp. Many of the points are afterwards amplified, and they appear to need it. Here is a portion of the "explanation":

From the beginning of this century, down to the present time, great attention and much labour have been bestowed by scientific men upon the calculations which relate to the bus. of life assu., and nearly all that could be desired in this direction has been accomplished. Little or nothing however has yet been done or attempted to improve its practice or to simplify its application to the wants of the community.

The old system of medical examination, with its long and offensive catechism, has been strictly adhered to and preserved, as though it had been perfect from the first, and susceptible of no further improvement.

But if progress has been so great and manifest in matters of calculation relating to assu., some efforts may reasonably now be used to promote the wide adoption of its benefits, by simplifying its practice. It is, therefore, now proposed, with this object directly in view, to apply the principles of assu. without having recourse to medical examination, and the numerous questions now required to be answered before an assu. can be effected. Doubtless some who are terrified at any attempt at innovation, will take alarm at this step. There will ever be persons who resist, as it were, instinctively all attempts at change. Those, however, who are capable of larger views, will perceive, that vast numbers, hitherto excluded, will now be brought within the reach of the benefits offered by life assu., while at the same time the stability of the office will in no way be endangered. Beyond all question, the present system is not only objectionable, but it is repugnant to the feelings, and repels many who would otherwise avail themselves of the advantages of life assu. It shocks the nervous, terrifies those who after an ordeal are rejected altogether, and perhaps accelerates some latent disorder with which they may be affected. A remedy is now proposed, both comprehensive, and in perfect accordance with sound and safe principles, and which possesses the great advantage of rendering all attempts at fraud by concealment or misrepresentation impracticable and impossible.

The only conditions imposed regarding *health* were, that persons of "notoriously bad health, or of notoriously bad habits," would not be admitted as members. Satisfactory proof of age was also required before any pol. would be delivered. The prosp., returning to the subject of health, and selection, says :

Under the existing system of life assu. it is absolutely necessary that offices should exercise the greatest caution in the selection of lives. An indiscriminate acceptance of every case would imperil the stability of these estab., and invite the infirm and sickly to seek a participation in the benefits they afford, at rates adjusted to suit those of average health and strength only. . . . Here, no discernment, no examination of individual cases is required ; the whole affair is left simply to the operation of the law of average : the very element which it is necessary should have full and perfect play in life assu. transactions. . . . The effect of selection under the present system, though indispensable, stunts the growth of life assu. by excluding from its benefits, except at exorbitant rates, those very persons who really stand most in need of its assistance. . . .

We now reach the tables, of which we must try to give a brief and intelligible description. They extended over classes A. to H. The contributions of the members of each class varied according to their several ages, and were so contrived that the aggregate of the contribution or prem. paid should purchase several paid-up pol. in each class. For instance, in class A. there would be drawn among the 50 contributors, 1 pol. for £25, and 5 for £5, each fully paid as to prems. The amount of the pol. being payable on the death of its holder. In class D. there were 1 fully-paid pol. for £500, and 5 for £100 each. The classes E. to H. inclusive embraced some paid-up pol. for whole term of life ; and some short-term pol.—making the matter more complicated. We may, therefore, content ourselves with an example of the working of class D. The class having its full complement of 50, the drawing takes place. If the 6 fortunate persons should be aged, say 15, 25, 35, 40, 50, and 60, the contribution and benefits would come out as follows :

Age 15	having paid	£8	3	4	gains a paid-up pol. for	£500.
" 25	"	£9	13	4	" "	£100.
" 35	"	£11	6	8	" "	£100.
" 40	"	£12	6	8	" "	£100.
" 50	"	£14	8	4	" "	£100.
" 60	"	£17	16	8	" "	£100.

The other 44 persons in the class obtained nothing ; but were told by the prosp. that they might join another class, and try their luck again ! A writer in the *Post Mag.*, under date 13th April, 1858, and under signature "Aleph," pointed out that the prems. proposed to be charged were very ample for the benefits offered.

From the first there was a doubt whether this scheme did not infringe upon the laws against lotteries. Mr. J. H. Lloyd gave a somewhat guarded opinion that it did not ; but we believe the law officers of the Crown took a different view. At all events the scheme of the classes was abandoned early in 1858 ; and an entirely new phase was presented.

It was upon the abandonment of this lottery project that the ins. world was startled out of its slumbers by the announcement of the well-intentioned scheme of CONSOLS INS. From a project, which, of all ins. projects ever propounded, was the most speculative, viz. the "Ins. Classes," the *Brit.*, *Foreign*, and *Colonial* at once dashed into a project, regarding which it was asserted there *could be no speculation*—for all was fixed and certain.

We do not propose to discuss the merits of the Consols Ins. plan here. That will be dealt with fully under its alphabetical head. We have only now to record the fate of the present Co. after it had made this important change in its system of bus., and a very few words will suffice for the purpose. Before the end of the same year (1858), the Co. was involved in the meshes of the Court of Chancery—arising out of an attempted fusion of the interests of the *Era* Ins. Asso. with that of this Co. The petition was indeed dismissed ; but the *Brit.*, *Foreign*, and *Colonial* received its death-blow. In 1859 its bus. became united with, or merged into the *Consols* Ins. Asso.

In 1858 the Co. had taken over the bus. of the *Brit. Exchequer*, which was very small.

The Co. had an accident ins. branch. The Man. Director of the Co. was T. H. Baylis ; the Sec. was Edward Moseley. [CONSOLS INS. CO.]

BRITISH AND FOREIGN ALLIANCE.—This Co. was projected in 1858, by Mr. Wm. Stafford and others ; but did not go forward.

BRITISH AND FOREIGN EXCHANGE.—A co. under this title was projected in 1855, for dealing in reversions, granting loans, and issuing life pol. It did not become matured.

BRITISH AND FOREIGN FIRE INS. CO., projected in 1853, with an authorized cap. of £100,000, in 40,000 shares of £2 10s. [power to increase cap. to £1,000,000.] This Co. was intended to be founded for the purpose of taking over the F. bus. of the *National Guardian*, and to be worked in connexion with the L. bus. of that Co. Mr. Jesse Hobson was announced as the Man. The project did not go forward.

BRITISH AND FOREIGN LIFE ASSU. CO., projected in 1851, by Mr. Geo. Saunders, gentleman, but it did not go beyond prov. regis.

BRITISH AND FOREIGN MARINE INS. CO., LIM., founded in Liverpool in 1863, with an authorized cap. of £1,000,000, in 50,000 shares of £20 each, £4 paid. The quoted price (June, 1872), is £7 to £8. The Co. has branches in Lond. and Manchester. Mr. R. N. Dale is Underwriter ; Mr. W. D. Pritt, Sec. The Man. in Lond. is Mr. T. H. Wells.

BRITISH AND FOREIGN PLATE-GLASS INS. CO., LIM., founded in 1870, with an authorized cap. of £10,000, in shares of £2, for the purpose of insuring against loss by accidental or malicious breakage of plate and other descriptions of glass.

BRITISH AND FOREIGN RELIANCE ASSU. CO., “for life, fire, marine, and general assu.,” founded in 1855, under the title of the *New Alliance*. In 1857 it took the name above given. The authorized cap. of the Co. was £1,000,000, in shares of £ . Mr. Thomas Scott was promoter of the Co. A prosp. issued after the change of name contains its general features, as “non-forfeiture pol. ;” “half-credit prems. ;” “temporary credits ;” “loans ;” “diseased, doubtful, or declined lives ;” “deposit branch ;” “*commission to the widows of agents*” :

The directors of the *Brit. and F. R.*, being fully convinced that the interests of a co. are advanced to a considerable extent by having an active and influential class of agents, and considering how unjust the system is of depriving the representatives of an agent at his death of the usual commission, when perhaps in the very year wherein death occurs he may have forwarded more bus. to the office than any previous one during his agency, have determined to allow to the widows of agents the commission that would have been received by the agent during his lifetime.

Next we reach the “accidental death department,” which was a simple plagiarism of a page from the prosp. of the Co. of that name. Then the “marine department,” which not only embraced the ordinary ins. of ship and freight, and cargo, but also embraced “baggage ins.” of passengers and mariners, and “marine casualty pol.” Mr. Edward Payton was Man. Director of the Co.

The Co. does not appear to have entered upon F. bus. In 1858 its L. bus. was trans. to the *Law Property*, and thereafter the Co. carried on marine ins. only.—See **BRIT. AND FOREIGN RELIANCE MARINE.**

BRITISH AND FOREIGN RELIANCE MARINE INS. CO.—This Co. was founded under the circumstances set forth in the preceding art. In 1858 it took the distinctive title of “Marine.” In 1859 it ceased to carry on any bus., and passed into liquidation, under the Court of Chancery.

BRITISH AND FOREIGN SHIP ASSU. CO.—This Co. was projected in 1850, by Mr. William L. Duff, Accountant, Lothbury, but it did not go beyond prov. regis.

BRITISH GUARANTEE ASSOCIATION, founded in Edinburgh in 1845, with an authorized cap. of £250,000, in 2500 shares of £10. The bus. of the Co. was limited to “Fidelity Guarantee.” The D. of Sett. of the Co. bore date 8 April, 1845 ; but as its main provisions are embodied in its Act of Incorp. to be presently noticed, we need not dwell upon them here. The prosp. said :

The object for which the *Brit. Guarantee Asso.* has been estab. is to provide, by a new application of the same principle [*average*], an efficient safeguard to the community against losses arising through fraud, dishonesty, or failure to account, on the part of persons holding offices of trust and responsibility, and thus providing a remedy for the numerous evils attendant on the system of private cautionary or suretyship.

The Asso. possesses a cap. of £250,000 subs. by about 450 individuals of undoubted means and responsibility ; and the deed of constitution not only provides that the whole partners shall be jointly and severally responsible for the engagements of the Asso., but that the profits shall, under certain regulations, be carried to its paid-up cap.—the shareholders only receiving in the meantime a moderate rate of int. on the contributed stock ; thus creating a constantly increasing fund for payment of and claims that may arise against the Asso. . . .

The bonds or pol. issued by the Asso. have been adjusted at the sight of the leading banking cos. and other public estab. throughout Scotland, and they are conceived in the most favourable terms for the employer, being much more comprehensive than those issued by the *Guarantee So.* of Lond. and other similar institutions. . . .

The guarantee of the Asso. is a *never-dying* security. Cases of default have frequently occurred, where, upon inquiry being made, it was found that all the sureties had been dead for years. In banks and other large public estab. where the securities are numerous, and the obligants resident in many different parts of the country, at a distance from head-quarters, it becomes nearly impossible to watch over the continued existence of the cautioners. . . .

Obvious and important as are the advantages thus offered by the Asso. to employers of every class, it confers benefits no less valuable upon those who require to find security for their fidelity. The difficulty of obtaining security for personal integrity has placed an insuperable barrier in the way of many persons of the highest character and ability. . . .

In 1846 the Co. obtained a special Act, 9 & 10 Vict., cap. ccclxxv.—*An Act to Incorp.*

the Brit. Guarantee Asso. The incorp. here given is only of a limited nature, in accordance with the law of 1837, of which we shall speak under LEGISLATION FOR AND AFFECTING INS. ASSO.

In 1854 the Co. obtained another special Act, 17 & 18 Vict., cap. ccxvi.—*An Act to Repeal and Amend the Act for Incorp. the Brit. Guarantee Asso., and to make further Provisions as to the Management and Regulation thereof.* The Co. was empowered to appoint a Board of Management in Lond. The repeal of the former Act was not to revive powers of D. of Sett. The Co. was re-incorp. by the present Act, but [sec. 40]:

No bond or pol. given or entered into by the Co. shall in any wise limit or restrict the general liability of the Co. or its individual members, as regards the recovery of any moneys by such bond or pol. to be secured.

Sec. 55 of the Act provided that the guarantee of the Co. might be taken in lieu of security required from persons in public offices and employments; and sec. 58, that the like guarantee might be taken in lieu of security required from persons connected with the administration of the *Poor Laws* in England and Ireland; and by sec. 62 officers of savings' banks were brought within its range. By sec. 72 a list of shareholders and bal. sheet were to be sent annually to the Board of Trade, who might direct paid-up cap. of Co. to be increased.

The Man. of the Co. was Ralph Erskine Scott; the Sec. Robert Mackay; the Sec. in Lond. was David Forrest. In 1862 the bus. of the Co. was trans. to the *European*, on terms of great advantage to the shareholders of this Asso.

BRITISH GUARANTEE OF TRUST CO., for "Guaranteeing the Fidelity of Persons Employed by others," projected in 1840, with a proposed cap. of £100,000, in 20,000 shares of £5. The prosp. said:

It is thought that by the exercise of due vigilance, and a searching inquiry into the character and previous habits of the persons who are proposed, few, if any, claims will arise against the Co. In this respect the bus. of the Co. will differ essentially from that of a life office, against which claims must necessarily arise at the death of the parties whose lives are assu. . . .

To protect the shareholders from loss without in any way lessening or impairing the broad and unrestricted security given to the public, the best information has been obtained, and calculations made, which have enabled the Co. to prepare rates of charge, which are considered amply sufficient to protect them against any loss which may arise from the dishonesty of persons whose fidelity shall be guaranteed.

Co. to be dissolved when one-third of the subs. cap. lost. First division of profits to be made in Jan. 1843—afterwards annually. The project never became developed.

BRITISH GUARDIAN LIFE ASSU. FUND, founded in 1869, under the title of *National Widows*, with an authorized cap. of £20,000 in shares of £1, Mr. C. W. Roe being the Act. Name changed 1872; and 17th July, same year, petition presented for winding up the Co.

BRITISH HOMŒOPATHIC AND GENERAL LIFE ASSU., ANNUITY AND REV. INT. CO.—A Co. under this title was projected in 1849, but no substantial progress was made beyond prov. regis.

BRITISH IMPERIAL INS. CORP., Limited, "for Gov. Security, Banking, Life, and Self Ins.," founded in Manchester in 1867, with an authorized cap. of £200,000, in 200,000 shares of £1—first issue 100,000 shares. Power is taken to increase the cap. to £2,000,000. The art. of asso. of the Co. bear date 10 Jan., 1867.

The prosp. says this Co. is founded "for the purpose of introducing important advantages into the practice of Life Ins." These are set out as follow:

1. *A system of Gov. security banking life ins.* A banking account being opened in Gov. securities for each pol., to the credit of which its full value is placed year by year, and held in trust, as the property of the insurer.
2. *Assigning to each pol. a current realizable value for every prem. paid*, such value being determined by a pub. valuation table, which value is indorsed on each pol.
3. *The investment in Gov. securities in trust, as the sole property of the insurer*, of the full value of each pol. for every prem. paid, such value not being liable for any other engagement than that of providing for the pol.
4. The vesting absolutely the full power to control the value of every pol. in each insurer.
5. The value of a pol.-banking account under this system amounts to nearly 50 p.c. of all prems. paid.
6. Making life pol. negotiable securities of the highest order, always available to their holders for monetary purposes.

The scheme is in fact Dr. Farr's system of "Consols Ins.," with some modifications introduced by Mr. T. H. Baylis. As we intend to deal with the Consols system specifically under its alphabetical head, we need not dwell upon it here; but we have to deal with the special features of this particular Co.

This Co. has a distinguishing feature from the *Consols Assu. Asso.*, not in principle, but in practice, viz. that whereas in that co. the *claims* were to be paid in Consols, and the *surrender values* in cash, in this case the very reverse is adopted. *The claims are payable in cash: the surrender values in Consols.* This is unquestionably a very great improvement.

The Co. has adopted the system of "Local Trusts"—that is, of placing the funds of each district under the control of two trustees in that district, by whom alone any portion of such funds can be withdrawn. There is also a general Deed of Trust, vesting powers in Central Trustees.

The following T. shows the annual growth of the Co.'s bus. :

Year ending June 30, 1868,	Pol. Issued 115,	Insuring £23,850.
" " 1869	" 226	" £64,790.
" " 1870	" 459	" £138,825.
" " 1871	" 718	" £193,180.

Total prems. received to 30 June, 1871, £19,789; total claims paid to same date, £2765. The bus. of the year ending June, 1872, will not show any marked increase.

The Co. has a non-par. branch, the investments in which are made in Indian securities, purchased with a view of realizing a rate of int. of not less than 4 p.c.

The annual audit-sheets of the Co. form one of its more marked features. The object of these is to show the amount of Consols standing to the credit of every pol. in force at the close of each financial year.

The plan of the Co. has been much commented upon by the press; in some cases receiving the highest laudation, in others the reverse. The following, from the *Insurance Record*, may be regarded as the utterance of an able and impartial authority :

The promoters are very sanguine about the profits they are going to make, since they state that the shareholders will secure at least 5 p.c. int. on their investment. But where are all these profits to come from? They point to the enormous profits made by the most successful of existing cos.; but these cos. realized nearly all their profits by investing their funds at a rate of int. considerably higher than 3 p.c. This will not affect the present office at all. The only source of profit they have is what they can save out of the proportion of prems. allowed for expenses, and perhaps a very small sum from the payment of the surrender values in stock instead of cash, and the difference in the int. on the investments made when the funds are at a discount. Before the shareholders can get 5 p.c., they must make £10,000 p.a. profit out of the above sources, since they are to have only 20 p.c. of the profits realized; and it will be many years before they will be able to make that amount. The profits can never be but a small fraction of those realized by other well-established offices, and on that score they will never be able to compete with them. . . .

The Co. make a great point in the prosp. of their scheme of pub. a table whereby each pol.-holder can tell the value of his pol., and which certainly has many advantages—all fully set forth; but some of their remarks are very unjust to other offices, for, although we only recollect seeing one other prosp.—there may be more—in which the surrender values are pub., still the offices nearly always state that they will give at least one-third of the prems. paid. Instead of giving *nil*, or something very insignificant, as stated in the prosp. before us, the offices are in the habit of giving a very liberal value for their pol., and frequently, when a pol. has been in force some years and has received large bonus add., the sum allowed for its surrender has far exceeded that put forward by this Co. We may also mention, for the information of Dr. Farr, that there are offices which return 50 p.c. of the prems. ann. to the assured, and will besides give a liberal value on the surrender of the pol.

These remarks will apply equally to any other Co. transacting bus. on the same footing; but as they were specially addressed to this Co., we reproduce them here.

It only remains to be added that the Co. is under conscientious and energetic management. Mr. John A. Feigan, the Gen. Man. (and sole owner of the copyright in the project), is an earnest believer in its success. He believes the large amount of cap. already sunk in the enterprise will bring a bus., which in the end will be productive of profits adequate to yield a return upon and replace all expenditure incurred. Mr. Wm. Davies, the Sec., is alike energetic and sanguine. The auditor is Dr. Farr, F.R.S., than whom no man is entitled to greater respect. The Trustees—both central and local—are men of known position [it is not their function to take any part in the details in the management], and the Directors are all men of bus. We shall watch the future of the Co. with much interest.

BRITISH INDUSTRY LIFE ASSU. CO., founded in 1852, with an authorized cap. of £100,000, in 20,000 shares of £5; power to increase to £200,000. This Co. was understood to have been founded by some of the men foremost in the management of the late Feargus O'Connor's land scheme—a scheme which, however well intentioned, was made the pretext for the most shameful abuses, political and financial. The prosp. speaks of the Co. as :

Adapted to meet the requirements of the middle and industrial classes by granting pol. as low as £5, or under that amount, according to age; by accepting prems. in weekly, monthly, quarterly, half-yearly, and ann. payments; by protecting the assurers where circumstances arise to interfere with their regular payments, and other decided advantages unattainable by the rules of general assu. offices.

Then, speaking of L. ins. generally, it says :

Clothing life assu. in the humblest possible habiliments, disguising its virtues under the most retreating form that ingenuity could invent, it would yet be difficult to prevent the most unpractised eye from discovering the presence of a true friend; indeed a guardian angel, whose ministering objects cannot but be considered little less than divine. . . .

An inspection of the following T. will show that the interests of all classes have been consulted in their formation, and that the poor man may follow the dictates of affection and duty, by using the road now thrown open to his use. It is to be hoped he will not neglect or delay embracing the means thus afforded him of showing to a discerning public, that the coarser cloth does not always cover the coarsest heart, and that the poor man's affection for his offspring issues from as pure a source, and flows as determinedly along, as may that of the generality of those who are termed the better classes.

We shall see presently how well the interests of the "poor man" were regarded by the then managers of this Co.

In the ordinary prosp. was a Table [No. xvii.] showing the annu. that might be secured at the age of either 50, 55, 60, or 65, receivable until death, by a weekly payment of *one shilling*. "*Prem. cease when annu. commences, and will be all returned in case of earlier death.*" Thus a person aged 25 might by paying 1s. per week secure an annu. of £6 1s. 6d. to commence at 50; or £9 4s. 9d. to commence at 55; £14 10s. 3d. at

60, or £23 3s. 9d. at 65. We assume this T. had the authority of Mr. E. Ryley, who was "Consulting Act."

Next we arrive at the "Tables of the *Family Friendly So.*"—which was worked in connexion with the Co., its name being appended to the name of the Co. in many of the publications. Here we are told :

The committee of management have devoted much and serious attention to the consideration of *mining casualties*, arising from explosions and other accidents, causing instantaneous death to the heads and branches of dependent families, involving the latter in present destitution and future misery. To meet this, they propose to grant pol. for sums of £25 each, payable within 14 days of death from casualties only ; such pol. to be granted without respect to age, upon an ann. payment of 3s. 6d. made in advance ; or by a weekly payment of *one penny*, or—to suit the pay-table of the miner—2d. p. fortnight.

Then follow the Life Tables, specially prepared for the "Industrial branch." These we shall speak of more fully under INDUSTRIAL INS.

The Co. speedily obtained a considerable bus. The following return we obtain from its various pub. reports :

6 months ending 1852	Pol. Iss. 10,386	Sum Ins. £160,163	Ann. Inc. £4905.
" 1853	" 36,400	" £595,400	" £18,102.

The first Sec. of the Co. was Michael O'Grady ; the Provincial Man., Thomas Clark. Towards the close of 1853, these names disappear from the prosp., and Mr. F. E. Kew became Sec. The cause which led to this change may be traced to the events which transpired at a meeting held at the Town Hall at Birmingham on the 20th Sept. in that year (1853). This meeting was called in the guise of a "tea meeting," but was evidently designed as an advertisement for future operations. But events took a very unexpected turn. The character of the men in power was freely canvassed ; and the pretensions of the Co. were found to be somewhat fallacious.

We cannot follow in detail the events of this most eventful meeting. We shall speak of a few of the principal. The Directors openly spoke of having a guarantee fund—the cap.—of £100,000, but at that very time some 650 shares were alone held by *bond fide* holders. But whatever the cap. might have been, it could not benefit the great majority of the pol.-holders ; for the pol. were mostly granted by the Friendly So., to which the cap. did not relate ! Again, the income of the Asso. was stated to be £27,000 p.a. at that date ; but the claims, if paid, would prob. have absorbed all the money—for all lives ins. for less than £50 were accepted without medical examination ! The Provincial Man.—a few years before a working weaver in Stockport—was now drawing a salary of £700 p.a. from the Co. It was suspected the other officials were being paid at a like extravagant rate. The whole thing in fact was a delusion and a snare.

The change of management came. The bus. was put upon a sounder footing. The following are the figures for the two succeeding years :

1855 New Pol. Issued 9638	Sum Ins. £141,031	New Prems. £5767.
1856 " 17,760	" £177,893	" £7040.

We have not the later figures. The Co. carried on bus. until nearly the close of 1860, when its funds and connexions were trans. to the *Prudential*.

BRITISH INS. OFFICE FROM FIRE.—This was one of the projections of the South Sea era. We shall give a detailed account of the circumstances attending its early formation in our HIST. OF FIRE INS. Its proposed cap. was £2,000,000, the subs. for which was taken on 16 Feb. 1720, at Three Tun Tavern, Swithin's-alley. It had all the characteristics of a *bond fide* undertaking from the beginning. Meetings of the subscribers were held. Offices were taken at Mr. Geo. Strahan's "over against the Royal Exchange." It was determined to proceed with bus. Application to this end was made to Parl., but was refused by the Privy Council in July, 1720.

BRITISH AND IRISH INS. OFFICE.—A Co. under this title was transacting F. bus. in *Ireland* in 1835. Its duty return for that year amounted to £1636 13s. 10d. In 1842 its duty return reached £2183. It died out in the following year.

BRITISH ISLES LIFE.—A Co. under this title was founded in Lond., in 1860, by Mr. Thos. Walker, Actuary. In the following year it passed out of existence.

BRITISH ISLES TRANSFERENTIAL F. AND L. ASSU., ANNUITY, MUTUAL ENDOWMENT, ECONOMIC, AND EDUCATIONAL ASSO.—This Co. was projected in 1852 by Henry Thomas Cole, but what its particular aim was, beyond bearing the most enigmatical title ever given to an ins. office, we cannot now discover. It did not go beyond prov. regis.

BRITISH LEGAL LIFE ASSU. AND LOAN CO., Lim., founded in Glasgow in 1863, with an authorized cap. of £10,000, in 2000 shares of £5 ; power to increase cap. to £100,000. The prospectus says :

This Co. was estab. specially for the benefit of the industrial classes, by affording to them all the advantages of a friendly so., with none of the risks connected therewith ; combined with the security and respectability of an assu. co. . . .

In the case of family pol., the prems. upon all lives therein mentioned shall be continued and paid during life ; and any payment made less than the whole amount due shall be placed to the credit of all the lives equally, and not to any one particular life ; and that upon the death or withdrawal of any one name or life, the pol. shall become void, but a new pol. and book will be issued to those remaining, which must be accepted and paid for. . . .

A stamped pol. will be issued to every accepted proposer or family of proposers, when they have been 13 full weeks proposed to the Co., if applied for and paid for at the office.

This system of "Family Ins." appears to be peculiar to Friendly Sos.

The Man. of the Co. is Henry Steel; the Act. R. W. Hamilton.

BRITISH LIFE ASSU. CO., LIM., founded in Lond. in 1870, with a regis. cap. of £5000, in shares of £5. The bus. extends to annu., endow., and guar. There was a peculiar feature about this asso. in the matter of the qualification of directors. They were to be qualified in one of three ways: either by shares upon which £200 should be paid; or by shares with £100 paid, and a life pol. for £500; or by a life pol. for £1000. We do not find the Co. in the list of existing offices.

BRITISH LIFE, FIRE, AND RENT.—A Co. under this title was projected in 1850, by Mr. John Cook, Actuary. It did not mature.

BRITISH MARINE.—An ins. co. under this title was projected in 1860, by Mr. John Geary. It did not go forward.

BRITISH MERCANTILE PLATE-GLASS INS. CO., projected in Liverpool in 1863, by Richard Hayhurst Rawtenstall. It did not mature.

BRITISH MERCURY.—The first number of a newspaper under this title was pub. 27 March, 1710, "printed for the Co. of the *Sun* F. office, in Threadneedle-street, behind the Royal Exchange, Lond., where policies in due form are deliver'd out for insuring Houses, moveable Goods, Furniture, and Wares, from Loss and Damage by Fire in any Part of Gt. Brit., to the value of £500 each pol., to any person who shall take them, paying the Stamp Duty and the First Quarter, viz., 2s. if they desire no *British Mercury*, or 2s. 6d. if they will have it. Lond.: *Printed by Hugh Meere, at the Black Fryer, in Black Fryers, where, and at the Sun office, advertisements are taken in.*" We shall have to speak further of this pub. in our hist. of the *Sun* F. office.

BRITISH MUTUAL LIFE ASSU. SO., founded in 1844, with a highly respectable direction. The prosp. said:

This So. is estab. strictly on the mut. principle, and will be found peculiarly adapted to aid the best intentions of the provident members of society; for by the lowness of the prems. *the greatest present benefit is secured to all*; and by the equitable division of the accumulated profits, those who may attain the average duration of life will derive *the greatest future benefit* in part. in the distribution of the surplus, which combines the advantage of a *Tontine* with those of an ordinary L. asso.

The prems. deduced from the Gov. Experience, with such add. as to provide perfect safety, are accurately adjusted to the several ages—at the early and middle ages *they are about one-fourth lower than at most offices.* The advantage of receiving, for the same prem., a pol. of £1250 instead of one for £1000 is sufficiently obvious, and needs no comment.

Then we have an explanation of the method of distributing the surplus, which is declared to be "at once safe, equitable, and favourable to good lives," the first and the last of which three propositions may be granted:

The surplus is reserved entirely for those members who survive the period at which their prems., with accumulated int. at 5 p.c., amount to the sums assured, and is thereafter divisible according to the value of the several pol., and not according to a fixed per-centage at all. . . . [SURPLUS, DISTRIBUTION OF.]

Diseased lives were ins.; half-credit given for seven years, and a free pol. given on surrender of pol. of seven years' standing, "corresponding to the then value of the previous prems. paid." Again:

Loans on personal or other approved security are readily obtainable by means of the *Brit. Mut. Subscription Loan Assu. Classes*, which are estab. in connexion with this So. upon equitable and advantageous terms, repayable by easy instalments, extending over lengthened periods.

These loan classes resembled, in their mode of working, the machinery of building sos., except that the security rendered for the advance obtained was mostly personal; and a L. pol. therefore formed an element in the security. The payments, and after a loan the repayments, were by monthly instalments.

In an early prosp. we find the following unique announcement: *A liberal commission will also be paid to ladies* (who prob. are generally the parties most benefited by L. assu.) *on all bus. they may introduce to the office.*"

The progress of the So. was slow. In March 1851 the amount of L. bus. on its books consisted of 780 pol., ins. £143,959, yielding in ann. prems. £3822. The average age of the lives ins. was under 32½ years; the average amount of each pol. being £183. The "loan classes" had been the means of bringing bus. and providing means for the employment of the funds of the So.

The So., we believe, was orig. founded under the Joint-Stock Cos. Regis. Act, 1844. A new D. of Sett., was afterwards prepared, dated 1 Jan., 1851. This deed contained the ordinary provisions for regulating ins. asso.; and it also provided for the dissolution of the So. and a division of the assets among the members on a resolution passed by three-fourths at a general meeting; but the deed contained no provisions for the amalg. of the So. with, or the sale of its business to any other asso. The omission of these powers has been the occasion of much trouble and expense.

On the 10th Oct., 1868, a provisional agreement was entered into between this So. and the *Prudential* Co. for a trans. of the bus., assets, and liabilities of the So. to the Co. This agreement contained a clause providing that each of the directors should receive £600, and the Sec. £5000, by way of compensation for loss of office. This portion of the arrangement was made the subject of an attack through the Court of Chancery; but it

was held by the Master of the Rolls, and also by the Lords Justices, that it did not invalidate the amalg.

On the 30th Oct., same year, the So. was regis under the Cos. Act, 1862, with a view to the final carrying out of the arrangement entered upon. On the 17th Nov. a meeting of the So. was called, at which resolutions were carried by the requisite majority to the following effect :

1. That the agreement made by the board of directors of the So. with the *Prudential Assu. Co.* be, and the same is hereby approved and adopted. 2. That the So. be wound up voluntarily. 3. That E. H. Galsworthy be, and is appointed Liq. of the So., and is authorized, directed, and empowered to carry out and bring into operation the agreement with the *Prudential*.

These resolutions being at a later meeting duly confirmed, the transfer was effected. Mr. Horatio Southall, a sol. at Birmingham, and the assignee of several life policies effected in the So., challenged these proceedings. On the 10 Nov., 1868, he filed a bill in Chancery to the following effect :

The bill prayed for a declaration that the agreement of 10th Oct. was beyond the powers of the So. and the Co., and was invalid and void ; for an injunction to restrain the defendants from carrying it into effect, and to restrain the directors of the So. from selling or trans. the assets contrary to the D. of Sett. ; for an order directing the Co. to transfer the assets to the Liq. of the So. ; for a declaration that the So. ought to be wound up, and its affairs dealt with in accordance with the provisions of the D. of Sett. ; and for an order for the directors to repay the sums received by them for compensation under the agreement.

The Master of the Rolls dismissed this bill with costs in 1870 ; the Lords Justices confirmed that decision in 1871. We believe there is still an appeal to the House of Lords pending. [AMALGAMATION.] Mr. Charles James Thicke was Sec. of the Co. during the entire period of its existence.

BRITISH NATION FIRE INS. CO., founded in 1863, with an authorized cap. of £1,000,000. The Co. was worked in conjunction with the *British Nation L.* office. In 1864 its F. duty returns amounted to £773 ; in 1865, to £991. During that year its bus. and connexions were united with the *European*.

BRITISH NATION LIFE ASSU. ASSO., founded in 1854 under the Joint-Stock Cos. Regis. Act, 1844, with an authorized cap. of £300,000, in shares of £1, "deposit 1s. per share." "All shareholders—male or female—entitled to vote personally or by proxy ; with the right to be present at all authorized meetings of the Co." The Man. Director and Act. of the Co. was, in the first instance, Mr. Francis Norton Erith ; while the "Consulting Act." was Mr. Edward Baylis. In a little while Mr. Erith disappeared, and Mr. Baylis became Man. Director and Act. Mr. Henry Lake did not appear on the scene until 1857.

The first prosp. issued is so remarkable a document that, but for its extreme length, we should have been disposed to reproduce it entire. We must, under the circumstances, be content with a condensation, preserving all the main and most remarkable features. Here is an indication of the scope of the business :

Pol. absolute and indisputable. . . . Assu. against paralysis, blindness, accident, and death, whichever may occur first ; also during the periods of pregnancy and childbirth . . . , and family provisions by way of endowment. . . .

Through a benevolent distribution, and an enlightened application of its profits, advantages are offered in this Asso. on equal terms, to persons of every class and degree—to the living—that are not to be found in any other co. existing ; and in the appropriation of one-tenth of its surplus gains to the all-important principle of protecting the pol. of the assured from lapsing, a feature is attached to the system of enduring excellence and incomparable value.

All the preceding is but the preliminary skirmishing—the main body of the scheme has now to be brought up :

That which has for its object the happiness of mankind, and the general welfare of society, is not less moral in its tendency than patriotic in its spirit. The contingencies incidental to a world of ceaseless activity, competition, and commerce, are suggestive of measures of the loftiest character, and of the noblest consecrations of mind. To protect the immediate interests of the living—by guarding against the effects of casualty, or the reverse of fortune—is to secure the prospective claims of representatives. It is indeed the only guarantee of permanent provision for families dependent upon the daily exertion of their fathers. If accident, and disease, or reverse, are not as individually certain as death, it should be remembered that all live in the very world and centre of vicissitudes, and that none, therefore, are exempted from the consequences of calamities, save such as provide against them. To disregard the possible wants of the living, is to nullify the object of life assu., excepting only where men live on the int. of accumulated or inherited possessions ; but the masses live by the sweat of the brow—by "the dignity of labour ;" and to the successors of such, the painful results of casualty are often as untimely and importunate as those arising from death itself. Life assu., as a system, is only valuable in proportion as it expands the power of collective beneficence, and protects the living with the certainty that guards, by the same agency, the interests of representatives. To attempt to restrain its capacities within the boundaries of the laws of mort., while its principle is obviously capable of extension to present wants, and the social order of the human race, is to beget a negligence of what is due to self, and to mankind, and to contract the process of civilization. "There is no placing a limit," says Prof. De Morgan, "to the extensions which its application might receive, if the public were fully aware of its principles, and of the safety with which they may be put into practice." This opinion has been practically substantiated within the last few years, by the introduction of a system of benevolent and self-benevolent life assu. No protective measure has ever been propounded which equals in safety, or rivals the certainty of life assu. Revealing in its operations a purpose to uproot "the charity which creates distress, but which is insufficient to relieve its evils," it commends itself to the judgment of every individual in whom a spirit of honest and honourable independence prevails. . . .

Nothing is offered by this so. which is unattainable ; nothing is proposed which is simply speculative, or merely visionary. By a more comprehensive and intelligent application of profits than

has hitherto prevailed—such application according with the laws of prob.—a distribution is proposed among the assured and shareholders of the accumulations and gains of the Asso., which cannot fail to humanize millions, and to obtain estimation among a very large number of persons. The application of wealth is not less elastic than is the increase of its accumulations at compound int.; and upon this truth is founded the practicability and excellence of the division of profits herein suggested. On the rational assumption that profits *must* and *will*, in the course of a few years, accrue to the bus. of the *Brit. Nation*, as they have arisen in the elder offices, the directors feel stimulated in their exertions to extend the blessings of the system, and to diffuse more generally the advantages in connexion with it. With the strong conviction that honourable enterprise ever commands success, and with a knowledge, resulting from experience in the practice of life assu., that there is abundant room for the growth of the principle upon which the fabric is founded—viz., that of assu. the average to the individual—the directors aim, by adequate rates, protective of the interests of successors, and by an enlightened division of profits, mitigative of the wants of the *living*, and promotive of social, moral, intellectual, and religious advancement, to give a breadth and reality of usefulness to the *Brit. Nation*, that shall draw to it a continual accession of prosperity; and that shall promote the elevation and sustain the happiness of mankind. After providing for contingent and prospective liabilities, to render the payment of every pol., on becoming a claim, alike prompt and *indisputable*, and to satisfy attendant costs of management, the intention is to distribute *the whole amount of bonus in creation of funds certain and increasing*, affecting the immediate and future, relative and self-interests, of every member and shareholder of the Co. This is a grand innovation upon the practice of the *primitive* offices, and it is an advance upon the reformatory method of distribution of *surplus* profits in *modern* cos. It is a complete reform, and perfectly consistent with the nicest calculations which can be made on the subject; it will do much to enhance the value of life assu., and to proclaim with increased power the unspeakable advantages of the system.

A great deal of the preceding reads like a prophetic burlesque of the real fate and incidents of the Co. But we have not by any means got through all the “tall talking” at present:

Poor, evanescent, and meagre is the division of accumulated profits in a life office, in which the living have no direct and personal interest, compared with a system that fortifies against reverses; encourages struggling honesty; sustains integral, the efforts of the past; seeks the moral, social, and intellectual progressiveness of all identified with its operations; raises associated individuals beyond the pain of eleemosynary attentions at seasons of sickness, old age, and want; obliterates the degrading influences of charity, and makes every man the conservator of comforts to his family. These are among the intentions for fulfilment in the *Brit. Nation*—intentions so vast and beneficent, and in their results so grand and imposing—so truly national in character and consequence, that a reciprocal appreciation of them by the public is confidently relied on. Sacredly reserving what is necessary for the satisfaction and indisputable payment of every obligation, either present or future, the D. of Sett. provides that, out of every £100 profits, . . . there shall be allotted and allocated a sum of £30, . . . creative of the following self-relief funds, essentially devoted to the interests of *shareholders and assured, their widows and orphans, in case of need, thus*:

1. £10 p.c. as a “Relief and Annu. Fund,” temporary or permanent, to aid and assist qualified and assured shareholders, who may require help in the season of distress, sickness, old age, or necessity.

2. £10 p.c. to be applied in two different ways: (1.) One moiety or half part of such 10 p.c. to provide HOMES for necessitous and deserving shareholders and assured, independent of rule or restraint, with every suitable domestic comfort, and to alleviate, *as far as possible*, the misfortunes they may have been uncontrollably visited with. (2.) One other moiety or next half part of such 10 p.c. to found and estab. an ASYLUM to protect deserving but unfortunate persons—assured or shareholders—in the event of accident or affliction, involving temporary or permanent distress and suffering, where every comfort would be administered, and where the advice of the medical officers of the Co. would at all times be available.

3. £10 p.c. as an immediate RELIEF FUND for granting pecuniary assistance to unfortunate but deserving shareholders and assured in cases of impending bankruptcy or insolvency—the claimant being required simply to make a private and confidential exposition of his or her affairs to a committee of investigation appointed by the directors—a course of procedure from which honesty would not shrink, to be saved from the disgrace of threatened ruin. This most admirable feature, originating in, and peculiar to, this inst., can scarcely be outvied for its practical utility and beneficent self-advantage. Such unspeakable privileges annexing to so wise an application of *surplus profits* speak for themselves.

4. A sum of £10 out of every £100 profits creative of a “SUSTENTATION POLICY FUND,” to secure to survivors the beneficial interest of the assured in their pol., by preventing the lapsing of them through temporary embarrassment or other causes. The practical excellence of this feature cannot be over-estimated. . . . By such an application of *one-tenth* of the profits of the *British Nation*, one of the strongest barricades to the universal adoption of life assu. is forced and carried amidst the acclamations of justice and intelligence. Many—too many—worthy parents have lived to experience the bitterness of holding a pol., which, after years of anxious solicitude, has lapsed through temporary inability to continue the payment of the prems. . . .

It seems like a piece of unnecessary bye-play to recount the qualifications necessary to gain participation in these purely imaginary funds: yet as these are set out with becoming gravity in the prosp. before us, we must briefly pass them in review.

As to the three first-named funds the qualifications were two-fold: (1) that a pol. should have been effected for the whole term of life, and that 5 consecutive years' prems. should have been paid thereon; (2) that shareholders should have paid all calls and deposits upon their shares. As to the 4th fund, the qualification was, that whole-life pol. should have been effected, and 5 consecutive years' prems. paid thereon; that a confidential submission of affairs be made, etc.; and that the several sums advanced be repaid free of int. on restoration of borrower's circumstances. Then there is this remarkable provision:

Until this fund is adequate to the purpose contemplated of saving pol. from lapse, *all sums paid as prems.* will be treated as single payment prems., and corresponding amounts paid on the death of the assured; that is, supposing an assu. in £1000 to have been effected on a life aged 30, for the whole term of life, and having paid four years' prems., the assured, if then unequal to continue the ann. payments, would have an absolute reversion, at his decease, payable to his representatives, of £98 16s. 8d., being the collective amount of the sums paid to the So.

We must now proceed to recount the other FUNDS to be created out of profits:

5. A sum of £20 out of every £100 profits, promotive of *Educational* purposes, and for the protection of the orphans, thus:

(1.) 10 p.c. for the building and perpetual endowment of a “*Classical, Mathematical, and Com-*

mercial School," admitting boarders, sons of qualified assured and shareholders, between the ages of 5 and 14. The education given will equal that furnished by any of the leading schools of the kingdom, and the whole course of study will be a preparation for the Universities. The aim is to raise, upon a sound plan of mental discipline, the qualifications of youth, that in after years shall fit them for the daily duties of life, and for introduction into official and important stations. The government will be entrusted to a head master, whose office will be the spiritual oversight and moral improvement of the pupils, with the direction of their studies. *It is a rule absolute, and beyond the control of any future act. of incorp., that, while the education shall be strictly religious and scriptural, the principle of catholicity shall exclude the imposition of all particular forms.* A portion of this 10 p.c. will be reserved for founding and annexing *scholarships* and for supplying *apprenticeship fees*, or other assistance, advancing the welfare of youth leaving school.

(2.) 10 p.c. for the building and perpetual endowment of an "ABSOLUTE ORPHAN ASYLUM," designed to receive and educate, from their birth, the fatherless infants of qualified assurers and shareholders, *without distinction of sex, place, or religious denomination*, till the boys are 14 and the girls 15 years of age respectively. The children would be boarded, clothed, nursed, and educated. *By a fundamental law, denominational catechisms are for ever prohibited introduction*, nor will any particular religious forms be imposed upon any child. Children are eligible for admission who have lost both parents—or the father only—or where the father is permanently disqualified [?] by physical or other affliction. At 5 years old the boys are to be drafted into the school. The system of female education will be, in every respect, in unison with the spirit of progressiveness and enlightenment. The domestic regulations will be under a well-qualified person of matronly habits and religious character. A portion of this £10 p.c. will be reserved to afford girls, on leaving school, some adequate provision to advance their comfort and respectability. The *school* and *orphan* funds of the *Brit. Nation* exhibit a noble and independent variation from the excellence of their prototypes, and will essentially aid in the great work of civilization.

Children of policy- and share-holders were to be qualified to participate in the benefits of *either* of these foundations whose parents should have effected "whole-life pol., and have paid five consecutive years' prem. thereon—or being holders of shares, shall have paid all calls and deposits upon each share." We proceed :

6. A sum of £10 out of every £100 profits to be applied to the building and perpetual endowment of an inst. in Lond. to be named "THE BRITISH NATION LIFE ASSU. CLUB." Dedicated expressly to and for the appropriate use of members of the So., assured and shareholders, resident in or visiting the metropolis, a social influence will be imparted to this inst.—that, whether commercially regarded, or relatively considered, will connect advantages with life assu., which will give to it a power, precedency, and impetus in behalf of whatsoever is just and good, national and important. It is next to impossible to limit the breadth of consequence resulting from an asso. thus formed upon the principle of mut. co-operation. The object in this instance is to estab. a nucleus that shall be productive of constant new life blood, from whence shall flow a continual stream of intelligence, combining moral progress and intellectual enjoyment, with the requirements of social comforts. [And so on through the whole of a very long paragraph.]

The qualification of membership to the *British Nation Assu. Club* was the effecting of a whole-life pol. and paying one prem. If renewals not paid, benefit of club to cease. As to shareholders, same as before.

7. A sum of £10 out of every £100 profits to be appropriated and applied in the following ways : (1.) For advancing *loans* on approved security—personal or otherwise—at a *minimum rate of 1 p.c. p.a. int.*, proportioned to the amount assured, such advances to be made for a term of years, to qualified shareholders and assured of honourable and estab. character, free of charge, whereby considerable benefit might accrue to persons interested in the redemption of mortgaged property. (2.) For guaranteeing qualified assurers and assured—either them or their children—of unimpeachable integrity of conduct—in situations of trust, without charging int. or other expenses, saving actual payments, thus rendering meritorious individuals eligible for trusts and engagements that otherwise might be unattainable.

Qualifications necessary to participate in those advantages were the same as under the first three heads. Then there follows a piece of biting satire, in this form, and all in italics :

The directors call particular attention to the circumstance that if, in the course of time, these several funds should prove more than adequate to meet the orig. claims upon them, the D. of Sett. provides for their application and division (at the recommendation of the board, sanctioned by the assured and shareholders) in any other mode, and to any other benefit, whether in reduction of prem. or otherwise, which may suggest itself as advantageous to the general interest of all connected with the So.

The scheme of distribution proceeds :

8. A sum of £10 out of every £100 profits applicable to the ultimate conversion of the *Brit. Nation* into a "*Mut. Life Assu. Asso.*," thus vesting—by the purchase of its shares at the market price of the day—all its affairs in the assured.

9. The remaining £10 out of every £100 profits to belong to the shareholders, so long as the proprietary continues, as a reasonable and just return for the safety and certainty afforded to the Co. in the outset, by the advance and subs. of cap. *Shareholders to parti. in a div. of not less than 5 p.c. p.a. upon the orig. sum paid*—such int. increasing year by year, as the funds and bus. of the So. shall increase—and likewise to int. after the uniform rate of £5 p.c. p.a. upon the first amount of profits and successive accumulations, applicable as a "*Redemption Capital Fund*," for the ultimate conversion of the corp. into a "*Mut. L. Assu. Asso.*" The holder of 100 shares and upwards to 200 to be entitled to one vote; and to an add. vote for every add. 100 shares so held.

Having got through these details, we must be prepared for a considerable expansion of the heart and feelings of their self-deluded author and contriver. Here we have it :

Such are the noble, rational, beneficent, and practical features of the *Brit. Nation L. Assu. Asso.*; and the directors are solemnly and religiously persuaded that with a due share of success in its operations, the creation of funds *out of the surplus profits*, and their application to useful and patriotic purposes, cannot but sensibly strengthen the bonds of society, and promote the highest aims of civilization. Inspiring self-protective measures, and conducing to that dignity which mitigates reverse and poverty, by guarding against their evils, *charity* is uprooted in the exercise of more gracious means, and the well-regulated exhibition of a *national pride*, that glories in the reputation of honest independence. It should ever be remembered that what has been contributed to in the

days of a former prosperity, cannot bequeath its blessings, in any period of adversity, disguised in the character of an alms-giving; but is clothed in the prudence and foresight of qualities endowed by Providence, and is sanctified in a gratitude too strong to declare itself. It is a right and a privilege to claim assistance in the hour of want or distress, from a fund which common sense and common honesty to self and society has helped to raise. Discarding the aids to spontaneous generosity, it kindles a sentiment higher in tone and more dignified in aspect, than the mere gratitude of the recipient of favours solicited and conferred. *By the simple process of devoting the profits of the bus. of life assu. to useful and benevolent ends, an important species of commerce, and an important principle of Christianity, are blended into one great action of universal power.* Such privileges have not merely a personal influence, but they constitute reversions of no ordinary value to generations yet unborn.

Then, as if by way of apology for the very extravagance of the preceding notions, the document proceeds :

There is nothing impossible in the application of the foregoing funds ; and there is nothing impossible in the creation of these funds, if energy and influence combine to accomplish so great a work of usefulness—and in a co-operative spirit, to disseminate the methods of appropriation of *surplus profits*. The astounding accumulations of profits which have been realized by offices, amounting to hundreds of thousands, and to millions sterling—the fact that 300,000 life pol. are not yet in existence, whilst the pop. of England alone is reckoned by millions—establish beyond controversy the truth that life assu. can be made the medium of conferring the greatest happiness upon the greatest number, and that the field for the successful achievements of *new inst.*, keeping pace with the times, is of ample and sufficient range to admit of honourable competition. Different in constitution, and in the application of their resources, there is no analogy between such inst. and others more generally known as *benefit socs*. This great undertaking is entered upon with every anticipation of success. . . .

By the D. of Sett. the liability of every shareholder is restricted to the amount of shares held. In the allocation of shares, no reserve will be made, and no partiality will be exercised. Due caution will be taken in distributing them, so as, through judicious appropriation, to secure a tangible and substantial support at the commencement, which shall estab. the Asso. upon the firmest possible foundation. *No deposit of less than £5 will, in the first instance, entitle shareholders to any benefits beyond such as attach commercially to the shares.* . . .

As life assu. investments are now universally held to be the *best* that can be made, because the least liable of any to fluctuation, the privileges offered to shareholders in the *Brit. Nation* are immeasurable and inestimable; and are alike continuous and imperishable to the assured. . . .

We have very much curtailed the latter portion of the prosp. There is a final flourish which must not be omitted :

The public is now in a position to form its own estimate of a scheme which is unrivalled in the breadth of its principles, and the magnitude of its proportions; and guided by large and practical experience, the directors are content to wait the issue of a verdict upon an undertaking which has had the maturest deliberation, and which has not been pressed into existence without that anxious and deep consideration ever attendant upon enduring enterprises based upon integrity, and pregnant with every righteousness of purpose; being fully impressed, by reason of the *expansiveness* of its constitution, that at no distant day numbers will rejoice in the prosperity and success, and the achievement of the aims, and hopes, of the founders of the *Brit. Nation* Life Assu. Asso.

Never were more pains bestowed upon any document than upon this prosp.; never did an asso., ushered into existence with such a formidable array, terminate in a more complete *fiasco*. We must, however, take events in their chronological sequence.

As we have already intimated, in a short time after the pub. of the above-recited prosp., Mr. Francis Norton Erith retired from the chief position in the Co., and Mr. Edward Baylis came to the front. We have before us a circular—"Particulars relating to shares and shareholders," bearing date 8 March, 1856, issued from the offices of the Co., 35, Cranbourne Street, Leicester Square, and signed, "Edward Baylis, Man. Director and Act.," from which we take the following additional details :

This Asso. having already a numerous and responsible proprietary, and an actually subscribed-for cap. of £135,000, is placed not only in a position of absolute stability, but renders an investment in it, as a shareholder, in every way secure and desirable. The following details are worthy of consideration : 1st. *As to shares.* The first deposit is 1s. p. share. . . . *The remaining 19s. of the £1 share will be made up to the shareholders by the add. of surplus profits, periodically declared.* It is not expected that any further sum than the orig. 1s. p. share will ever be called for or required. 2. *As to shareholders.* Over and above the immediate and prospective pecuniary advantages derived by a shareholder, male or female, of this Asso., he or she possesses rights and privileges which are precious and inalienable, descending even to the fourth and fifth generations. . . . *Original proprietorship in this office is a security against want. A shareholder, or his widow, or his orphans, would, if unfortunately requiring it—even years after his shares may have been sold, and his connexion with the Asso. entirely ceased—be entitled not only to 5 p.c. p.a. upon the amount paid upon his shares, but also, equally with assurers, to a participation in the advantages of all the funds of the Asso. And until the name of a shareholder could be expunged from the D. of Sett. [not a very easy process, as some of the shareholders are just (1872) about to find] or the deed of trans. constituting him or her a proprietor, these invaluable privileges could neither be disputed, withheld, nor diminished. Again, if a parent subs. for shares in his or her own name, conjointly with the name of his or her child (a minor, male or female), the above-described advantages of proprietorship would descend to grandchildren, or to widows or orphans of grandchildren. In like manner, if a grandparent subs. for shares in his or her own name, conjointly with the name of a grandchild, the same benefits would descend to great-grandchildren, or to the widows, or orphans of great-grandchildren.*

We have not by any means exhausted the points of this circular. There is a most ingenious hypothetical view of the result of three divisions of surplus. The first, at the end of 10 years, of £100,000 ; the second, at the end of 15 years, of £200,000 ; and the third, at the close of 20 years from the commencement of operations, of £300,000 ! These are carried out in their due proportions to the several imaginary funds ; and everybody concerned becomes rich to a degree only rivalled in the regions of fairyland. We chronicle these things as we find them. A thrill of pain passes through us as we imagine what may a few months hence be the fate of any one who unfortunately placed faith in such statements—aye, and of his children or grandchildren !

There was a later prosp. issued by Mr. E. Baylis, in which the visions of the early prosp. are reiterated in a condensed form ; and an intimation given of " new sources of bus. of this Asso.," viz. :

By undertaking the management of property of deceased persons, or which has been placed under deed in settlement, by its Executorship and Trust Department, at a small fixed charge, in addition to expenses necessarily and actually incurred. Proper forms of bequests will be furnished, gratuitously, and arrangements made, if wished, for the legal business of trust being done by the parties' own solicitor.

By undertaking the management and payment of annu. or allowances, purchased from this office, on behalf of relatives, friends, or dependents, whether payable weekly, monthly, quarterly, or at any other interval: *thus enabling parties to make certain provision for deserving individuals, whom they may wish to befriend, and which they might not otherwise have the means or opportunity of doing.*

A library, lecture, class, and news-rooms, each and all free, and open to every member, whether assurer or shareholder, lady or gentleman. The library opens daily until 10 o'clock in the evening, except on Saturdays, when it closes at 5.

We have already said that in 1857 Mr. Henry Lake came upon the scene. In Dec. of that year an extraordinary general meeting of the proprietary was held, and the " Asso. was remodelled." The " peculiar appropriation of profits" and the " philanthropic funds" were removed from the Deed of Sett.; "and the Asso. is now to be placed on a solid commercial basis, and conducted on purely commercial principles." Mr. Edward Baylis, "the founder of the inst., had retired from the direction." It was stated that there were 800 "active" agents appointed; and "active" operations were to be commenced.

The first step in the new management was the taking over, in 1857, of the bus. of the *General Accident Co.*, which had been founded in 1855.

Up to 31 Dec., 1857, the Co. had issued 260 life pol., ins. £62,578, and yielding in ann. prems. £2381. But of these there were in force at that date 168 pol., ins. £38,365; ann. prems. £1388. The accident bus. was very small.

In 1858 a bill was filed against the Co. by a Mr. Burt, an ex-Director, for the purpose of setting aside the purchase of Mr. Baylis' and Mr. Birmingham's shares by the Co., [they each held 20,000 shares!] and also to make those gentlemen and the other directors personally responsible for £5500, being a loan contracted by them on behalf of the Asso. The bill was dismissed with costs. This decision was confirmed on appeal.

It was in 1859 that the Co. entered upon a career of reckless amalg., which in the end produced such disastrous results. The first co. taken over was the *British Provident*, which had itself taken over the businesses of several other offices. By means of this union the income of the *B. Nation* was said to be at the rate of £20,000, and the new bus. at the rate of £10,000 p.a. In this same year the Co. disposed of its Accident bus. to the *Accidental Death Co.* (No. 2).

In 1860 the Co. took over the bus. of the *British Commercial*, of which we have already given the hist. It was announced that by this junction the income of the *B.N.* would amount to £70,000 p.a., and the new prems. to £12,000. In the same year the Co. took over the bus. of the *English Widows Fund*, which had itself absorbed the connexions of several other offices. In this year also the Plate-Glass bus. of the Co. was trans. to the *Plate-Glass Insurance Co.*

In 1861 the Co. took over the businesses of the *English and Irish Church and University L.*, and of the *Lond. and Provincial Provident L.* Spacious offices were taken in Regent St.; and the most flattering accounts of the prosperity of the Co. were circulated.

In 1862 the Co. took over the bus. of the *Waterloo L.* On the closing of the financial year of operations, 31 March, 1862, the following figures were presented: new pol. during the year 2356, ins. £483,743; yielding in new prems. £16,364. Ann. income from pol. in force £136,965. Accumulated funds (irrespective of subs. cap.) £257,861.

In the *Post-Mag.*, 9 May, 1863, there appeared the following:

The *Brit. Nation* Life Assu. Asso. has just completed its valuation, and a rev. bonus, averaging 30 p.c. of the amount of prems. paid, has been declared on pol. entitled to participate.

The pol. issued during the financial year ending 31 March, 1863, were 2585, ins. £620,400, and yielding in new prems. £21,697; ann. income £159,821; claims by death 229, for £69,262. During the year the Co. took over the bus. of the *Lond. Equitable*, and of the *Wellington*.

The bus. of the Co. for the financial year ending 31 March, 1864, was 3559 pol., ins. £944,520, and yielding in new prems. £31,143. The ann. income was stated to be £161,465; and the sum ins. to amount to upwards of £5,000,000. The general meeting was most enthusiastic.

In 1865 the bus. of the Co. was united with that of the *European*—the latter Co. now dating the cause of its final downfall to that event. [EUROPEAN.]

We hear no more of the *Brit. Nation* until the year 1871, when, in consequence of the failure of the *European*, many of the contracts of the former Co. would fall back upon it. In this state of matters the shareholders of the *Brit. Nation* were called together, and the Co. was placed under voluntary liq.—the liquidators being Mr. Geo. Whiffin and Mr. Arthur Cooper, gentlemen thoroughly qualified for their duties. Various attempts have been made on behalf of the liquidators of the *European* to have the above-named gentlemen removed, and themselves appointed. The *British Nation* Co. asserts that it is solvent: and the shareholders resist all interference by the *European*. The case came

before the Lords Justices to-day (5 July, 1872) on appeal; when it was announced that an arrangement had been come to between the two sets of liquidators.

BRITISH NATIONAL INS. CORP., LIM., founded in Manchester in 1871, with an authorized cap. of £1,000,000, in 500,000 shares of £2, for the purpose of carrying on F. ins. and fidelity guarantee ins. The prosp. says:

This Corp. has been founded for the purpose of carrying into practice certain improvements which the experience of fire ins. operations has suggested, and the supplying of such omissions as will secure a more just and equitable administration of the bus.

The *Brit. National Ins. Corp., Lim.*, will be worked in conjunction with the *Brit. Imperial*, and thus associated will commence its operations with many substantial advantages over similar undertakings. It will be separate so far as its cap., income, assets, responsibilities, and profits are concerned, but it will at once receive the benefit of the whole of the working staff of the *Brit. Imperial*, and of the large number of agencies completely organized and in full working order, as well as the branch offices estab. in Lond., Edin., Dublin, Liverpool, Leeds, Glasgow, and other important commercial centres. . . .

From these advantages it will be seen that a large amount of bus. will be immediately obtained, while a very considerable proportion of the cost ordinarily incident to the formation of a co. of such magnitude will be avoided, and by blending the management and conducting the bus. of both Corp. in the same offices, a large ann. outlay will be saved.

Regarding its F. bus., the prosp. says:

In this department advantages will be offered on classes of property where the restrictions of the combined offices prove arbitrary and unjust. Instead of the present unsatisfactory system of fixed rating, each ins. will be charged according to its actual value, and every feature of the risk will be taken into consideration. Allowance will be made for any circumstance tending to lessen the risk of fire, and special attention will be given to improvements in the construction of buildings, the local supplies of water, and the means and appliances available for the extinction of fire.

With a view of giving the pol.-holder an opportunity of participating in the profits resulting from its own contributions, it is proposed to allow a per-centage, by way of bonus, on the payment of renewal premis. in all cases where no claim has been made upon the Corp. during the year preceding, an advantage afforded by no other office, and which it is anticipated will attract to the Corp. a large proportion of the best risks as direct ins.

As to the fidelity branch, there is the following:

It is intended to combine with the bus. of fire ins. that of guarantee for the honesty of persons filling situations of trust. It is well known that for years past the public departments, banks, railway and other offices, as well as commercial and trading firms, have largely encouraged the principle of security by the guarantee bonds of an estab. co. for the faithful conduct of their employes and the proper accounting of moneys, in preference to the uncertain and ruinous system of private suretyship. The experience of cos. that have carried on the bus. of guarantee, either by itself or in conjunction with other bus., shows that the laws of average and probability apply to the contingencies which such guarantees are intended to cover, as they do to the chances of loss provided for by an ordinary fire pol.; and that the operations can be made as profitable, when conducted with proper discrimination in the selection of risks, as any others subject to the same laws. . . .

Arrangements will be made for the combination of life ins. with fidelity guarantee, the life pol. being subject to conditions which will have the effect of creating an additional incentive to continued integrity.

Mr. J. A. Feigan is Man. Director; and Messrs. James Croston and Wm. Davis are Joint Managers.

BRITISH AND NORTH AMERICA LIFE AND FIRE.—A Co. under this title was projected in 1856 by Mr. Henry Salter. It did not proceed.

BRITISH PEERAGE, DURATION OF LIFE AMONGST THE. See PEERAGE.

BRITISH PROTECTOR LIFE ASSU. CO., sometimes called *Brit. Protector Mut.*—The bus. upon which this Co. was founded was obtained by a co. regis. in 1851 as the *New Protector*. In 1852 the new title was prov. regis.; and in 1853 this Co. was completely formed, with a cap. of £100,000, in 10,000 shares of £10. Its prosp. dealt with the subject with commendable brevity. "Life assu. is one of the features of this really practical age, and its importance is becoming daily more appreciated by the masses. The benefits arising from it are neither few nor small," etc., etc. Policies indisputable, "cases of fraud only being excepted." The Co. allowed "substitution" of approved lives—all advantages as to bonus, etc., accruing to the substituted life. "Declined" lives were ins. After transacting a very fair bus., the connexions of the Co. were trans. to the *Sovereign* in 1859. Mr. John Phillips was Sec., Mr. G. Doncaster Superintendent of Agents.

BRITISH PROVIDENT INS., "for Mutual Life Ins."—This inst. was projected in 1845, but never got beyond that stage.

BRITISH PROVIDENT LIFE AND FIRE ASSU. SO. [No. 1], founded in 1850, with an authorized cap. of £100,000, in 10,000 shares of £10. The objects of the Co. were stated to be:

1. To adapt to the wants, and bring within the means, of the trading and industrial classes the most valuable features of life assu. . . .
2. To promote the practice of fire ins. amongst the above important section of the community. . . .
3. To invest the funds of the So. in a beneficial manner, by loans advanced to the share and pol.-holders.

The profits of the Fire department were to be divided every 7 years among pol.-holders of £300 and upwards, of 5 years' standing. The bus. of this department was arranged under 8 classes, one being specially devoted to the industrial classes,—pol. being issued as low as £10. In the L. department the pol. were indisputable:

No error, mistake, or omission, however important, will be allowed to vitiate the life pol. of this So., and the fact of issuing the same will be evidence of the validity thereof. All pol. therefore will, upon any ground whatever, be indefeasible and indisputable.

Then there was "non-forfeiture of life prems.":

All moneys paid in respect of life pol. for sums not exceeding £100 each, which may have become void for want of due renewal of the prems., will, on the decease of the parties, be refunded (less 10 p.c.) to their representatives.

Next we have "half-credit prems." and ins. against accidents: "assu. are granted to provide against disability resulting from accidents—a feature peculiarly suited to persons whose occupations are hazardous"—further details presently. It was a feature to advance in cases of persons of "humble circumstances" a portion of the sum ins. "especially to defray funeral expenses." There were a series of Life T. for the "Industrial classes;" and a "Savings Fund Department."

On the original prosp. Mr. J. H. James appears as Consulting Act.; Mr. C. T. Rouse, as Man. of L. Depart.; Mr. H. Brooks as Man. of F. Depart. The F. bus. was very small, the duty collected did not reach £100 for the first 3 years. In 1852 Mr. Alfred Burt became Act. and Man. of the Co. In 1853 he was superseded by Mr. John Sheridan, who threw more energy into the enterprise. Under his management Mr. F. P. F. Strousberg became "Inspector-general of Branches and Agencies."

The following is an abstract of the T. of rates (No. 17) for ins. "against inability to work, from disease or accident," showing the prems. for a £10 annu. during life:

Age next Birthday.	Single.	Annual.	Half-Yearly.	Quarterly.	Age next Birthday.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
20	8 18 0	0 12 10	0 6 10	0 3 5	20
25	9 0 3	0 14 1	0 7 8	0 3 10	25
30	9 2 9	0 15 5	0 8 6	0 4 3	30
35	9 5 6	0 16 11	0 9 4	0 4 8	35
40	9 8 5	0 18 7	0 10 2	0 5 1	40
45	9 11 6	1 0 4	0 11 2	0 5 6	45
50	9 14 10	1 2 5	0 12 5	0 6 2	50
55	9 18 6	1 5 0	0 13 9	0 7 0	55

In 1857 the So. took over the bus. of the *Diadem*; and 1858 the bus. of the *Anglo-Australian*. [ANGLO-AUSTRALIAN.] [AMALGAMATION.] In 1859 the L. bus. of the So. was trans. to the *British Nation*; its F. bus. to the *State*.

BRITISH PROVIDENT LIFE AND GUARANTEE ASSO. LIM. [called *Brit. Prov.* No. 2.] This Asso. was founded in 1872, upon the basis of the *North London*, founded in 1870. The authorized cap. of the Asso. is £100,000, in shares of £1. An ann. actuarial investigation is to be made, and an ann. distribution of surplus. The Asso. is respectably constituted, but has its way to make amongst very active rivals. The proposal form of the Asso. is unique, consisting of a declaration merely, but embodying the main provisions of the ordinary life form. Mr. Geo. Tomkins is Man., Mr. C. H. A. Ross is the Sec., Mr. E. Justican the Act.

BRITISH PRUDENTIAL INS. CO. See PRUDENTIAL.

BRITISH REVERSIONARY ASSO.—This Asso. was projected in 1845, but died in the bud.

BRITISH SCEPTRE L. INS. CO.—This Co. was projected in 1852 by Mr. Adam Speilman, the well-known bullion broker of Lombard-street. It had at date of complete regis. 1400 shares subs. by the *Palladium* of France, but no English shareholders. The project did not go forward.

BRITISH SERVICE.—An ins. co. under this title was projected in 1850 by Mr. Edward Curtis, sol., 24, Golden-square, Westminster. It went through several stages of regis., but finally collapsed.

BRITISH SHIELD L. INS. CO., founded in 1857, and in the same year its bus. and connexions became united with the *London and Provincial Provident*. Mr. James Moor was Sec. The last-named Co. became merged in the *European*, by reason of its amalg. with the *Brit. Nation*.

BRITISH SHIP.—In order to entitle a ship to the privileges of a British ship, it must be built in Gt. Brit., and belong entirely to Brit. subjects, and the master and three-fourths of the mariners must be Brit. subjects, except in case of death or unavoidable accidents. In time of war the proportion of British mariners required is generally restricted to one-fourth; and the same proportion only is required in the Greenland Fishery.

BRITISH SOCIETY, "Hedge-lane, Charing Cross," founded in 1711, for ins. on births and marriages.

BRITISH SOCIETY, "for granting policies on the lives of 650 persons for £300 each policy."—A scheme so described was set on foot in 1714. More details concerning it will be given under our HIST. OF LIFE INS.

BRITISH STANDARD LIFE ASSU. SO. [No. 1].—An office under this title was projected in 1846, by Mr. Alexander Robertson, who was to have been its Man. Director in Scotland. The proposed cap. was £50,000, in 10,000 shares of £5; the whole amount to be paid up, concerning which the prosp. said:

This affords a better guarantee to the public than a much larger nominal cap., which, though subs.

for, is unpaid, and which, if available at the formation of a co., may, by the transference of shares, become unavailable when it is required. The paid-up cap. is much greater than can ever be required by the Co.; and while the shareholders are thus relieved of all future responsibility, the public have the most complete guarantee for the faithful discharge of all obligations undertaken by the Co.

On the subject of life ins. generally, there was the following :

Life assu. has been found to be one of the happiest contrivances of modern times for the relief of families from the pressure of premature death or unexpected misfortune; and it is resorted to as the means of enabling parties to enter into pecuniary trans. . . . Great however as have been the advantages derived from life assu., it is thought that its benefits may be very largely extended, by improvements upon the mode of management, and a better application of the principles upon which its results are founded; and it is in this belief that the *Brit. Standard L. Assu. So.* has been instituted.

There was this special feature regarding military and naval service, and foreign residence :

Naval or military officers, or others, requiring to go to foreign countries, or to be engaged in actual warfare, may be assu. without extra prem., on a stipulation that a deduction will be made from the sum assu. when the same comes to be payable. By this new mode of assu. the creditors of naval or military men can render their debts absolutely certain; and gentlemen likely to be ordered abroad can borrow such money as their wants require, upon undoubted security.

"Half-credit" for seven years. And, finally, "the pol. granted by this Co. will be indefeasible and unchallengeable upon any ground of innocent mistake or error," etc. The enterprise never got fully afloat, although a respectable board was organized for Scotland.

BRITISH STANDARD LIFE AND SICKNESS CO. [No. 2], founded in Leeds in 1864, with an authorized cap. of £20,000. Mr. John Ely was promoter and Man. Director. The Co. passed out of existence in 1866.

BRITISH STANDARD INS. CO. [No. 3], founded in 1868, for the purpose of carrying on the business of life and guarantee ins., its authorized cap. being £2,000,000. Mr. J. W. N. Brooks was one of the promoters. We believe the enterprise has died out.

BRITISH SURETY CO., "for guaranteeing the fidelity of persons employed by others," projected in 1842, with a proposed cap. of £100,000, in 20,000 shares of £5. The prosp. says :

This Co. guarantees the faithful application of funds entrusted to Man., Sec., Clerks, Agents, Travellers, Stewards, Collectors, and all other persons holding situations involving responsibility; and provides surety for the fidelity of persons seeking to hold situations of trust. . . .

The Co. further proposes as one of its *principal objects*, and as being likely to be attended with the most beneficial results, to afford to parties substantial inducements to adopt the benefits of *life assu.*—now acknowledged to be the most advantageous mode of creating from a limited income a provision against the infirmities of age, and for the support of a family in the event of death. This Co. is in no respect a life assu. so., and it will be altogether optional with persons to avail themselves of the life assu. part of the plan; but with the view and hope of inducing parties to cultivate a habit of economy and lay the foundation for a future provision, the guarantee of the Co. will be granted *on more favourable terms to those who have a life pol., obtained from any life assu. co.*, to offer as a collateral security for their fidelity; without in the slightest degree detracting from the ann. increasing value of the life pol., the Co. will be enabled, on the strength of it, to grant their guarantees at reduced rates to the holders of such pol. [FIDELITY GUARANTEE.]

It was proposed to divide the profits of the Co. among the holders of fidelity pol. The first division to take place in Jan. 1843. Mr. Henry Stephenson was Sec. We believe this enterprise merged into the *Guarantee So.* founded same year.

BRITISH TONTINE, OR UNIVERSAL AND PERPETUAL MUT. ASSU. ASSO.—A preliminary announcement of this Asso. appeared under date 7 Jan., 1846, as follows :

Among the variety of claims to public notice on the principles of life assu. the Brit. Tontine will be found, on investigation, to be the most eligible and secure; safe in its mode of ins.; accessible to all ages; admissible to any amount, and founded solely on Gov. or real and approved securities. It is divided into classes, determinable at fixed periods, but always open and progressing; it secures not merely simple, but compound int.; it returns not merely cap., but cap., int., and profits too; it involves no forfeiture, and incurs no responsibility beyond the sum subs. It enables all on highly advantageous mut. principles to ins. either their own or others' lives for their own or others' benefit; and parents, at the birth of a child, to ins. for that child, when it shall attain to manhood, the possession of a cap. which may be wisely and usefully employed in bus., or, if invested in Gov. stock, for the purchase of an annu., secure to it an independent competence for the remainder of its days.

The orig. prosp. was entered at Stationers' Hall; but the matter does not appear to have proceeded. Mr. John Townsend was Sec. *pro tem.*

BRITISH UNION ASSU. CO. LIM., founded in 1862, with an authorized cap. of £250,000, in 25,000 shares of £10. The bus. of the Co. embraced both F. and L. The prosp. had the advantage of brevity :

The Co. affords to persons, of every rank and condition in life, the greatest possible facilities for creating an immediate and certain fund for the protection of their families or dependents in case of early death, or for making a provision for themselves in old age; and the leading feature of the Co. is *the combination in one office of all the improvements which have been adopted by well-estab. cos.*

Among the leading features: "profits equitably divided amongst good lives," "surrender values of pol. pub."

This was one of the first ins. asso. founded under the Lim. Liability Law. Mr. Wm. Howell Preston was the founder, Mr. Charles Rutherford was Man., and Mr. W. E. Williams Sec. In 1865 the bus. of the Co. was trans. to the *Empire*.

BRITISH UNION JOINT-STOCK BANK, LIFE ASSU., REV. INT., AND ANNU. CO., projected prob. about 1842, with a proposed cap. of £3,000,000, in 30,000 shares of £100. The preliminary prosp. said :

This estab. will combine the bus. of a bank with life assu., the purchase of rev., and the granting of

annu. . . . Hitherto these different branches of finance have been carried on separately and distinctly, although they form portions of one extensive and general monetary system. The previous mode of banking did not admit of their union, because the cap. of a private bank was too limited, and the connexions too confined to compass operations of such magnitude. The introduction of joint-stock co. banks, similar in principle to the Bank of England, has removed this impediment.

A more detailed prosp. was to have been shortly pub. This we have never seen. We believe the enterprise did not advance. Mr. W. A. Kentish was Sec.

BRITISH UNION LIFE.—A Co. under this title was projected in 1850, by Mr. James Stephens, accountant, 3, Copthall Buildings, but it made no progress.

BRITISH UNIVERSAL LIFE ASSU., LIM., founded in 1869, with an authorized cap. of £100,000, in 100,000 shares of £1. The objects of the Co. were: To grant or effect ins. on lives by way of tontines, survivorships, and on other contingencies. To grant and secure endowments for children and others, and endowment assurances, and annuity assurances; also assu. against death or personal injury, arising from casualty or accident by land or sea; and also generally the bus. of a casualty, sickness, or accident assu. so., etc. Mr. John Phillips was the Sec. The Co. appears to have passed out of existence.

BRITISH WORKMAN FIRE INS. CO., founded in 1871, with an authorized cap. of £50,000, in shares of £ . The Co. is still in existence.

BRITISH WORKMAN'S MUTUAL LIFE AND ENDOWMENT SO., founded in Birmingham in 1866, with an authorized cap. of £2000, Mr. Geo. Horton being the first regis. promoter. The bus. of the Co. is confined to Industrial Ins.; and it has this special feature—that pol. of 3½ years' standing bear a surrender value of 20 p.c. of the prems. paid; after which it increases at the rate of 5 p.c. up to 50.

The new bus. of the So. for the year 1871 consisted of 9913 pol. issued, yielding in ann. prems. £3630; claims by death in the year £1489; by sickness £307; surrender of pol. £108. Total pol. in force, 18,956, yielding an ann. income of £7227. There were 33 shareholders holding 1339 shares. The paid-up cap. was £1283.

We believe the So. is respectably conducted—Mr. H. Port is the Man.

BRITON LIFE ASSOCIATION, founded in 1853, with an authorized cap. of £50,000, in 5000 shares of £10—afterwards increased to £100,000, in shares of the same denomination. The first Sec. of the Co. was Mr. Edward Parsons; the Consulting Act. Mr. Thomas Walker, B.A. The bus. was very small during the first two years, viz. sums ins. £21,000 and £47,575 respectively. In 1855 Mr. John Messent became Sec., and the bus. made a marked increase, viz. to £103,450 in sums ins. In 1857 the Co. absorbed the bus. of the *Brunswick L.* The bus. of that year was 1062 pol. issued, ins. £219,200.

The Co. had a scheme of "Building Assu. Pol.," which presented some new features. [BUILDING SO. INS.] But the characteristic feature of the Asso. was the scheme of allocating the surplus in such a manner as to render the pol. *payable during the lifetime of the insured.* Of this plan we shall speak more at large later.

It will be more convenient to continue the hist. of the Co. from this point under its new name—*Briton, Medical, and General.*

BRITON, MEDICAL, AND GENERAL LIFE ASSO.—This Asso. is founded upon the base of the *Briton L. Asso.*, estab. in 1853—the early hist. of which we have already briefly traced. The D. of Sett. of the orig. co., dated 1st Feb. 1854, was drawn in the usual form of such deeds before the application of the Lim. Liability Law to ins. asso., with somewhat restrictive provisions; such, for instance, that 7 days' notice should be given to the Board of any intended transfer of shares; and that if the Co. refused to pass the trans. it must purchase the shares (sec. 12). When the Co. was preparing to enter upon a wider sphere than had been orig. contemplated, it became necessary to remove all such restrictive clauses from its deed, and introduce some new powers. This was accomplished by means of a supplementary deed, dated 3rd January, 1861.

In 1862 the Co. took over the bus. of the *New Equitable L.*, which had previously absorbed the *Medical and General*; and later in the same year it absorbed the bus. and extended connexions of the *Unity General*. The Asso. now assumed very largely increased proportions. The D. of Sett. was further altered by means of special resolutions, passed 16th Feb. and confirmed 2nd March, 1863. The chief of these alterations was the change of name from the *Briton* to the *Briton, Medical, and General L. Asso.* Power was taken to increase the cap. to £1,000,000. No one shareholder may hold more than 500 shares. The qualification of a director is the holding of not less than 200 shares. In this year the Co. migrated from Moorgate-street to its present commodious offices in the Strand.

The growth of the bus. of the Co. during the six years ending 1863 is shown in the following table:

Year	New Pol.	1342	Amount Ins.	£262,815	New Prems.	£8328
1858						
1859	"	1751	"	£314,240	"	£9751
1860	"	1805	"	£346,160	"	£10,023
1861	"	1839	"	£349,990	"	£10,084
1862	"	2023	"	£459,540	"	£15,275
1863	"	2328	"	£567,453	"	£18,372

The claims for death in the last year were 134, ins. (less re-insurances) £38,699. The assets of the Asso. reached £216,312.

The special feature of the *Assn.* is unquestionably its mode of appropriating the surplus—viz. applying it towards making the pol. payable during the lifetime of the ins. This result is accomplished in this wise: Each bonus is applied to extinguish a certain number of the later premia. the ins. would have to pay if he survived to the full expected period of ins. lives.

The following examples are from the prosp., and show the result of one bonus so applied, each successive bonus of course bringing the period nearer:

(1). A. B., aged 17, assn. for £300, having participated in one division of profits, is now entitled to receive his pol. at the age of 71½, or sooner in the event of death. (2). C. D., aged 20, assn. for £500, is in like manner now entitled to receive his pol. at the age of 76, or sooner in the event of death. (3). E. F., aged 25, assn. for £500, has participated in two divisions of profits. At the first he had the age of 75½ named for the payment of the sum assn., and at the second, the age of 78½ was named; or the sum assn. would be paid at death, should that event occur before attaining that age. (4). G. H., aged 60, assn. for £600, has also participated in two divisions of profits. At the first he had the age of 84 named for the payment of the sum assn., and at the second, the age of 77½ was named, or the sum assn. would be paid at death, should that event occur before attaining that age.

The working of the plan has been more clearly put by Mr. David Harris, late Man. of the Scottish branch of the Co., from whose clever little pamphlet we extract the following:

To make this a little clearer, suppose the case of a man, aged 25, assuring his life in the *British*, his portion of the profits would be applied to his credit at the first profit distribution in which he participated, and the age would be named for the payment of his pol. This age would, as a matter of course, be distant, in the *first* instance, say 73 years, but at the next and subsequent divisions, his share of the profits being treated in a similar way, earlier periods would be named, the process being again and again repeated, each time bringing the date of payment nearer to the existing age of the pol.-holder. At length the last-named period will be reached, the sum assn. paid, and the pol.-holder released from payment of all further premia. Of course, the period during life when a pol. will be paid will depend upon the amount of profits periodically allocated.

He next advances an argument in support of the plan:

If a man, aged say 27, assn. his life, and should die during the succeeding 15 years, the chances are he will leave a wife and young family otherwise totally unprovided for; but, should he live to attain the age of say 53 or 55, his position may be changed materially. The family which 20 years ago were young and entirely dependent on their parents for subsistence, will have grown up, and the same care which induced the taking out of the pol. may have placed them all in positions of advancement, and enabled them to earn their own living, while the payment of the prem. on the pol. of assn. may now have become a burden on the parent, who is aged and worn out by previous activity and labour. Every one must admit the hardness of such a case. Instances of this kind are of daily occurrence amongst those whose incomes are dependent upon their own exertions; their power is lessened by the inroads which time has made upon their mental or physical powers.

The argument for avoiding the continued payment of the prem. at an advanced age of the ins. strikes at one of the most glaring defects of the present system of L. ins.

In 1865 the Co. took over the bus. of the the *Britannia L.*, and of the *Britannia Mut.*; and in 1866 the bus. of the *Indisputable Ins. Co. of Scotland*.

In 1868 the *Assn.* pub. its *most experience* for the five years ending with 1867. This we shall notice in some detail under a special heading. In the same year it adopted a simplified form of pol., which was designated "indisputable and indefensible from the date of its issue." This pol. recites: "Whereas — is now living, and it is hereby agreed that this statement shall be the sole basis of the contract hereinafter contained." The 3rd clause is the most important:

And it is hereby declared that this pol. shall be indisputable and indefensible; and the fact of this pol. having been issued shall be conclusive evidence of the validity thereof; and the *Assn.* shall not be entitled to refuse or delay payment of the money hereby assn., on the ground of any error, mistake, omission, or misstatement whatsoever, made at or before the effecting of this assn., by or on the part of the person or persons effecting the same and it is hereby further declared, that the life assured has obtained *whole-world* leave, and is at liberty to travel and reside in all parts of the world without prejudicing this assn.

The *Ins. Agent*, reviewing this pol., said:

Any one acquainted with life assn. practice knows full well how seldom the restrictive conditions are enforced, and the opinion seems to be gaining ground that any trifling loss occasioned by their abandonment will be much more than counterbalanced by the increased business consequent on the greater simplicity of the assn. contract. This is evidently the opinion of the *British* directors.

The following T. shows the later progress of the bus. of the *Assn.*:

Year.	New Pol.	Sums Ins.	New Prem.	Claims.	Ann. Income.	Accu. Funds.
1864	2454	£621,885	£20,060	200 = £60,810	£124,091	£217,503
1865	2769	839,926	25,000	203 = 65,496	171,994	490,389
6	2947	804,979	26,252	335 = 141,364	226,151	530,280
7	3057	792,725	25,466	311 = 114,000	231,545	571,817
8	2472	703,451	25,277	335 = 127,886	237,980	667,493
9	2224	630,768	20,706	351 = 140,986	241,890	682,324
0	1887	516,531	17,473	401 = 171,128	246,477	—
1	1847	555,695	20,191	431 = 156,222	245,824	606,143

ich fluctuations as are here shown are due to the pressure of the times, and other instances, beyond the control of the management.

1 the whole we regard this as a type of the progressive clam of modern L. offices. us., and still more its agency connexions, have been largely augmented by its several

amalg. Whether these have been all equally advantageous it is not our province to inquire. For the most part they have been judicious. The Asso. is under able and energetic management, with Mr. Messent still at the helm. The new bus. of each successive year testifies that the Asso. enjoys a large share of popular favour.

BRITON, MED., AND GEN. MORTALITY EXPERIENCE.—In 1868 this office pub. its mort. experience extending over the five years ending 31st Dec., 1867—including in all 1165 deaths, classified under eleven distinctive causes, as shown in the following table. The ages at death in quinquennial periods are given in the original table—with a supplemental table showing the intensity of the various causes of disease to male and female. The male deaths were 963, the female 202. There is no distinction shown between the mort. of the diseased lives taken over from the *Medical* and *General* and *New Equitable*, or taken subsequently, and those of the ordinary class—although the sums remaining ins. on the 31st Dec., 1867, were thus apportioned :

On *Healthy* lives £6,313,756

On *Invalid* lives £849,584

The causes of death and proportions of males and females are stated as follows :—

	Totals.	Males.	Females.	REDUCED TO 1000.		Per-centage.
				Males.	Females.	
1. Zymotic diseases	139	124	15	106	13	119
2. Diseases of uncertain seat	58	37	21	32	18	50
3. Tubercular diseases	228	192	36	165	31	196
4. Diseases of circulation	97	79	18	68	16	84
5. Diseases of the nervous system	170	143	27	123	23	146
6. Diseases of respiratory organs	166	142	24	122	21	143
7. Diseases of digestive organs	113	90	23	77	20	97
8. Diseases of urinary organs	39	34	5	29	4	33
9. Diseases of generative organs	15	1	14	1	12	13
10. Violent deaths	61	58	3	48	3	51
11. Causes not specified	79	63	16	54	14	68
Total from all causes	1165	963	202	825	175	1000

The proportion of violent deaths is unusually large: they include drowning, 19; rupture of blood vessels, 3; violence, 1; suicide 7; other accidents, 31, total, 61. The deaths from old age were 32.

BRODIE, PATRICK, was Sec. of *National Ins. Co. of Scotland* from 1844 to 1846.

BRODIE, SAMUEL.—Manager of *Scottish Sea* from its formation down to 1863.

BRODY IN GALICIA.—In 1801 a conflagration destroyed 1500 houses in this town.

BROKEN-BACKED.—A ship is said to be broken-backed when, in consequence of being loosened from age or injury, her frame droops at either end.—*Brande*.

BROKEN STOWAGE.—That space in a ship which is not filled by her cargo.

BROKENSHIR, JOHN.—Commenced a somewhat remarkable ins. career as Superintendent of Agents for *Medical Invalid*, in 1846. In 1849 took a similar appointment with the *Union*. In 1854, became Man. of London Branch of *Leeds and Yorkshire*. About 1857 became Superintendent of Agents for *English Widows*; was after that with *City of London*, then with *London Equitable*. Was for a short time with the *Colonial* (No. 2), and is well known to various other offices.

Is author of two pamph. which have had a considerable circulation. 1. *Life Assurance Explained*, pub. 1857. 2. *Practical Hints to Life Agents*.

BROKER.—An agent employed to make bargains and contracts between other persons in matters of trade, commerce, and navigation. Hence *insurance*-brokers, ship-brokers, stock-brokers, etc. Ins.-brokers occupy a very prominent position in matters of marine ins. In the U.S. a great deal of the F. ins. bus. is transacted through the intervention of brokers; and the practice is increasing in this country. A broker differs in his legal status from an agent; he is strictly a middle man negotiating between the parties, and in a legal point of view often representing both; while an agent only represents the person employing him for a given purpose. The subject will be followed up under **INS.-BROKERS**.

BROKERAGE.—The per-centage paid to a broker for his trouble in effecting a sale, or in negotiating any particular bus. In Marine Ins. the rate of brokerage is 5 p.c. on the premiums.

BROKERAGE COMMISSION.—A term used to designate the process of "compounding" the commission allowed to ins. agents. Life ins. agents in Gt. Brit. are usually allowed a commission of 10 p.c. on the first year's prem., and 5 p.c. afterwards, during the continuance of the pol. Most offices will compound this rate of commission by a present payment of 25 p.c., or more, on the first year's prem. In the U.S. it is the regular practice to do so—the brokerage commission ranging up to 35 p.c. The objection to the system is that it offers an inducement to unscrupulous agents to change their offices frequently, and transfer their pol. To meet this, a new scheme has recently been propounded, by Mr. E. W. Bryant, as follows: 20 p.c. 1st year; 10 p.c. 2nd year; and 5 p.c. 3rd year. We regard this as a great improvement. In France and Belgium the

brokerage commission on 7 years' fire pol. frequently absorbs the whole of the first year's prem., and part of the second, which the office has to advance for the bus. We believe this practice, which originated in competition rather than reason, is undergoing some change. The *Scot. Widows' Fund* is now paying a brokerage commission of but 15 p.c.

BROMFIELD, J. COLEY, Man. in Lond. of *Southern and Western Ins. Co.* Mr. Bromfield has been associated with several ins. enterprises. In 1866-7 he was Sec. of Lond. branch of *Scottish Commercial*. In 1868 he was connected with *Life Ins. Union*. In 1869 he founded the *INS. EXCHANGE*, which was not an ins. asso., but simply intended to be a repository of information connected with ins. associations generally. In 1871 he promoted the *Ladies Ins. Co.*, which did not mature.

BRONCHI.—From the Greek, *wind-pipe*.—*Bronchial sound*. A natural sound produced by the passage of the air in respiration, and to be heard through the stethoscope. *Bronchial tubes* are the divisions and sub-divisions of the *bronchi* which take place as these enter the lungs. The terminations of the bronchial tubes within the lungs are called *bronchial cells*, or air-cells.

BRONCHITIS.—Inflammation of the wind-pipe, or of the *bronchi*. It is called *bronchial inflammation*; *peripneumonia*, *notha*, etc.

BRONCHITIS, DEATHS FROM (Class, LOCAL; Order, Diseases of *Respiratory Organs*).—The deaths from this cause in England show a very considerable increase. For 10 consecutive years they were as follows: 1858, 29,093; 1859, 25,998; 1860, 32,347; 1861, 30,986; 1862, 32,526; 1863, 32,025; 1864, 38,969; 1865, 36,428; 1866, 41,334; 1867, 40,373; showing a variation from 1509 deaths to each million of the pop. living in 1858 to 1894 per million in 1864, and 1902 in 1867. Over a period of fifteen years ending 1864 the deaths averaged 1344 per million. For the five years ending 1864 they averaged 1658 per million.

The deaths in 1867 were: Males, 20,543; Females, 19,830. Of the males, 7263 died under 5; 204 between 5 and 10; 52 between 10 and 15; 59 between 15 and 20; 94 20 and 25; 428 between 25 and 35; 903 between 35 and 45; 1784 between 45 and 55; 3088 between 55 and 65; 3685 between 65 and 75; 2494 between 75 and 85; 473 between 85 and 95; and 16 over 95. Of the females, 6309 died under 5; 209 between 5 and 10; 52 between 10 and 15; 78 between 15 and 20; 119 between 20 and 25; 391 between 25 and 35; 771 between 35 and 45; 1582 between 45 and 55; 2819 between 55 and 65; 4159 between 65 and 75; 2831 between 75 and 85; 536 between 85 and 95; and 24 over 95.

BROOK, THOMAS, was Sec. of *Halifax, Bradford, and Keighley Ins. Office*, from 1852 during the remainder of its short career.

BROOKE, HENRY JAMES, F.R.S., etc., was for many years Act. and Sec. of the *London Life*, which he had aided in founding while engaged in mercantile pursuits, and many years before he could have entertained any idea of becoming officially connected with it.

In 1828 he pub. *Observations on a Pamph. lately pub. by Mr. Morgan, entitled: "A View of the Rise and Progress of the Equitable So."* He was at that time Sec. of *London Life*.

In 1843 Mr. Brooke retired on a liberal annu., and devoted the remainder of his life to scientific pursuits, in some branches of which he had become distinguished. He died in 1857, aged 86. An interesting memoir of him appears in vol. vii. of *Assu. Mag.*, reprinted from *Proceedings of the Royal So.*

BROOKS, H., was Fire Man. of *British Provident* [No. 1.] in 1850.

BROOKS, WILLIAM, was Assistant Man. of the *Progress Ins. Co.* since commencement of 1869. Had been for many years previously in the *Northern*.

BROOMFIELD, J. J., Assistant Sec. of *Phoenix F.* since 1863.

BROTHERLY SOCIETY OF ANNUITANTS.—This So. was founded and held its meetings at Mr. John Bastows, the sign of the *Sir Paul Pindar's Head*, in Bishopsgate Without, prior to 1745. In that year it became amalg. with the *Amicable So.* by means of a formal agreement, to which we refer in our hist. of *LIFE INS.*

BROWN, A. G., was Man. of *Scottish Imperial* from 1865 to 1870. Mr. Brown was trained to the bus. of banking.

BROWN, DONALD, pub. in 1850, dated from "Temporary offices, 79, South Audley-street, Grosvenor-square," some "Obs. on the Present System of L. Assu.," and "Some Suggestions which I have made with a view to its Improvement." His broadside contains the following suggestions with a view to remedy the defects which he had pointed out:

That the D. of Sett. comprising laws, conditions, provisions, rules and regulations of sos., inst., asso. and cos., estab. for the purpose of granting pol. for life assu., annu. and other provisions, in relation to the assu. shall be of the most favourable character consistent with public safety, and that the pol. issued shall comprehend and embrace all the vicissitudes, changes, and contingencies, pecuniary or otherwise, to which the assu. may become subject during life; and also the pol. shall not only be indisputable, as it has recently been characterized by life assu. cos., subject of course to the supremacy of the law—but a *bond fide* security—no question being left open for future settlement. . . .

To this end he proposed that no breach of the conditions or stipulations of the pol., however serious, should cause its forfeiture; but that an extra prem. should be charged or retained, "equivalent to the increased risk imposed or incurred by the act or omission of the assured." We doubt whether the scheme matured into the formation of an office.

BROWN, GEO. HENRY, was Superintending Director of *Achilles* Brit. and Foreign Life.

BROWN, HENRY, Accountant, pub. in Dublin, in 1844: *Tables of Simple Int. at 3½ p.c. p.a.*

BROWN, JAMES, Accountant, Edinburgh, pub. in 1835: *Report Respecting Division of Profits in the Edinburgh Life Office.*

BROWN, J. H., Sec. *National Provincial Plate-Glass.*

BROWN, SAMUEL, F.I.A.—Mr. Brown has long occupied a foremost rank among the actuaries of Gt. Brit., and his fame extends not only through Europe but to the U.S.; and most deservedly so. Mr. Brown entered the *Equitable* in 1829, and received his first training in that venerable office. In 1850 he was elected Act. of the *Mutual*; and in 1855 he was appointed to his present position of Act. to the *Guardian*, as the successor of Mr. Griffith Davies, who then retired. Mr. Brown has been retained as Consulting Act. by the following asso.: The *United Kingdom Provident*, in 1863; the *Reliance Mut.* in 1866; and the *Clergy Mut.* in 1870.

Mr. Brown was elected President of the Inst. of Act. in 1867, as the successor of Mr. Jellicoe. He retired from that position in 1870. In 1868 he was President of the Sec. of Economic Science and Statistics, at the meeting of the Brit. Asso. at Norwich. But the most conspicuous service rendered by Mr. Brown to the ins. profession remains to be noted in the long series of publications and papers which have proceeded from his pen, during a period compassing nearly a quarter of a century. We shall endeavour to supply a correct chronological hist. of these.

In 1849 he pub. *A Few Thoughts on Commission, Division of Profits, Selection of Lives, the Mort. in India, and other Subjects relating to Life Assu.*, contained in a series of Letters recently pub. in the *Post-Mag.* under the signature of "Crito." This little book is familiarly known to most persons engaged in the practice of life ins.

In 1850 the *Assu. Mag.* was estab., and Mr. Brown became an active contributor to its pages. To Vol. I. he contributed the following papers: (1). *On a General Method of Approximation to the Value of Annu. and Assu. for Long Terms of Years depending on one or two Lives.* (2). *On Fires in London during the 17 Years from 1833 to 1849, showing the Numbers which Occurred in Different Trades, and the Principal Causes by which they were Occasioned.* (3). *French Rates for Ins. against Fire, according to the Nature of Risks and Trades or Occupations.* (4). *Marine Risks between Lond. and Dungeness, and between the Thames and the Isle of Wight.* (5). *Sketch of the Recent Progress of the Assu. of Life and Property on the Continent (Part I. France).* (6). *Increase of Fire Ins. in Gt. Brit. from 1844 to 1850.* (7). *Premis. for Maritime Assu. Settled by the Assu. Brokers at Paris, Feb. 1850.* (8). *Casualties to Shipping in the St. George's and Liverpool Channels in 1850.*

To Vol. II. he contributed the following: (1). *Sketch of the Recent Progress of the Assu. of Life and Property on the Continent (continued)—Life Assurance—Maritime Assurance—Hail Insurance—Accident Assurance—Cattle Assurance.* (2). *Life Assu. in Gt. Brit. 1849–51, Table Showing the Progress of.* (3). *On the Uniform Action of Human Will as Exhibited by its Mean Results in Social Statistics.* (4). *On the Collection of Data in Various Branches of Assu.* (5). *Summary of Assu. Business of Gt. Brit. and other Countries.*

To Vol. III. the following: (1). *On the Influence of the Ages of Parents at the Time of Marriage on the Sex of Children, and on the Prolificness of Marriage.* (2). *Mort. amongst Selected Lives in Germany.* (3). *Assu. Associations of Germany.*

In 1853 he pub. a pamph.: *Is the present Competition in Life Assu. Cos. Advantageous to the Public?* He also gave evidence before the Select Parl. Committee on Assu. Asso., which sat in this year.

To Vol. IV. of the *Assu. Mag.* he contributed: (1). *Operations of German Fire Ins. Cos., 1852–3.* (2). *Operations of Riunione Adriatica, 1838–53.* (3). *On the Sufficiency of the Existing Cos. for the Bus. of Life Assu., with a List of the Cos. at the end of 1852, their Guaranteed and Paid-up Share Cap., etc.* (4). *A Simple Plan of Classifying the Policies of a Life Assu. Co., so as to Possess at any time the Means of Forming a Table of the Mort. Experienced in the Office.* (5). *M. Quetelet on the Calculation of Tables of Mort. [translated].*

To Vol. V. the following: (1). *On the Rates of Sickness and Mort. amongst the Members of Friendly Societies in France.* (2). *New Life Assu. Bus. in Germany [translation].* (3). *Frauds in Life Assu. in Germany [extract of a letter by Herr Rath G. Hoff, 1854].*

In Vol. VI. the following: (1). *Life Assu., Showing Progress in Gt. Brit., 1852–4.* (2). *On the Origin and Progress of the Calculus of Probabilities.* (3). *Ins. of Theatres against Fire.*

In Vol. VII. the following: (1) *Statistics of Fires in Berlin, 1854.* (2). *French Maritime Losses, Comparison of.* (3). *On London Fires.* (4). *On the Progress of Fire Ins. in Gt. Brit. as Compared with other Countries.* (5). *On the Proportion of Marriages at different Ages of the Sexes [this paper was read before Brit. Asso. same year].* (6). *On the Investments of the Funds of Assu. Cos.* (7). *Progress and Position of Assu. Cos. in Germany, 1855 [translated and abridged from the German of Herr W. Lazarus].*

In 1857 he read before the Statistical So. a paper, *On the Progress of Fire Ins. in Gt. Brit. as compared with other Countries.* [S. Journ., vol. 20.]

In Vol. VIII. of *Assu. Mag.* : (1). *On the Mort. amongst American Assu. Lives.* (2). *Ins. against Hail, Frost, Inundations, and Mort. of Cattle* [translated and abridged from a pamph. by M. Le Hir].

In Vol. X. : (1). *Investment of Funds of Life Assu. Sos.* (2). *Report to International Statistical Society, as to the Institute of Actuaries.*

In 1863 there was pub., under the joint superintendence of Mr. Brown, Mr. Peter Hardy, and Colonel J. T. Smith, F.R.S., *New Tables of Mort., deduced from the 50 Years' Experience of the Madras Military Fund, 1808 to 1858; with an Introductory Letter, by Colonel J. T. Smith, F.R.S., F.I.A., etc., Act. to the Institution.*

In the same year Mr. Brown contributed to Vol. XI. of the *Assu. Mag.* a paper, *On the Rates of Mort. and Marriage amongst Europeans in India.*

In 1864 he contributed to Vol. XI. of *Assu. Mag.* a paper, *On the Present Position of Friendly Sos. in England and Wales*; and in the same year, to Vol. XII., a paper, *On the Rates of Mort. and Marriage amongst Europeans in India.* [This paper was read before Brit. Asso. in the same year.]

In 1865 he completed a *Report on the Bengal Civil Fund*, and also a *Report on the Bengal Medical Retiring Fund.* These were printed for private distribution among the members of the Funds.

In 1867 he contributed to Vol. XIII. of *Assu. Mag.* the following papers : (1). *Eighth Census of U.S. in 1860.* (2). *On the Mort. of the U.S. of America, as Deduced from the Last Census.*

In Vol. XV. of *Assu. Mag.* will be found extracts from Mr. Brown's address before the Brit. Asso. (1868), so far as it treated of ins. topics.

Mr. Brown was one of the Committee appointed by the Inst. of Actuaries to superintend the collection of the data for and preparation of the *Experience Tables* (No. 2), pub. in 1869. He prepared the able introduction to the vol.

In 1871 he contributed to Vol. XVI. of *Assu. Mag.* a paper, *On the Rate of Mort. amongst the Natives compared with that of Europeans in India.*

In add. to the preceding, Mr. Brown has contributed many papers to various learned sos. on other subjects, more especially on Decimal Coinage and Uniform Weights and Measures; while his Reports on the various International Statistical Congresses are full of interest and instruction. He gave evidence before the Parl. Committee on Assu. Asso. in 1853. He has now in course of preparation, *Report on Bengal Military and Orphans So.* Also *R. on Bombay Civil Fund.* We trust that Mr. Brown may be spared for many years to pursue his enlightened and beneficent labours. Each of the preceding papers is noticed under its proper head.

BROWN, THOMAS, Sec. of *Glasgow Annu. So.*, which position he has occupied since 1845.

BROWN, WALTER, Sec. of Manchester branch of *Scottish Widows* since 1871. Mr. Brown had previously been Sec. of *Scottish National* from 1858. On leaving Edinburgh for his present appointment in 1871, he received a handsome testimonial.

BROWN, WILLIAM, pub. in 1678 [? 1674], *The Entering Clerks Vade Mecum. Being an exact Collection of Precedents for Declarations and Pleadings in most Actions; especially such as are brought for, or against, Heirs, Executors, or Administrators, Executrixes, Administratrixes, and their Husbands, in Personal Actions, with variety of Actions upon Bills of Exchange, Policies of Assurance, etc., etc.* [2nd ed., 1695.] Among the precedents are two which appear to relate to ins. The first, to Birth Ins., viz. on a bond "to be paid at the birth of the plaintiff's first child, or within one month then next following after request made to defendant." The next, upon a pol. of marine ins.

BROWNE, CHARLES, was Sec. of *Whittington* from 1855 to 1859.

BROWNE, CHARLES ROUSE, Assistant Sec. of *Westminster Fire* since 1869. He entered the office in 1850, and has passed through the various departments of the office. He represents the fourth generation of his family in the management of this most successful office.

BROWNE, E. W., Man. and Sec. of Scottish branch of *Briton Life* since 1872. Mr. Browne had been for some years previously connected with the Scottish bus. of the same office.

BROWNE, GEORGE, became Sec. of *Westminster Fire* in 1768, and retired from that position in 1792. Mr. Browne was consulted by Lord North regarding the imposition of the duty upon F. ins.; and by his advice, based upon his practical knowledge of the bus. of F. ins., the duty was levied in a very much less inconvenient manner than had been originally contemplated.

BROWNE, GEO. HOWE, son of the preceding, became Sec. of *Westminster Fire* in 1792, and retired from that position in 1838.

BROWNE, WILLIAM MEREDITH, Sec. of *Westminster F.* since 1838, having been Assistant Sec. in 1831. Mr. Browne was one of the founders of the *Mutual L.* in 1834, but never took office in the so. In 1839 he founded the *Westminster and General L.*, and became its Act. In 1869, after 30 years of service, he retired from the active duties of this last position, and became Consulting Act.

In 1832 the London Fire Engine Estab. was formed. Mr. Browne became its Hon. Sec., and remained in that position down to 1865, when the Fire Police of the metropolis

was most properly undertaken by the Metropolitan Board of Works. For this lengthened service Mr. Browne not only deserved well of all the ins. offices supporting the estab., but also of the entire metropolis, whose safety was in the keeping of this voluntary organization.

Mr. Browne gave evidence before the Select Parl. Committee of 1862, on fires in the metropolis; but as that evidence chiefly related to the formation and management of the then Lond. Fire Engine Estab., which has since passed over to the Board of Works, there is no necessity to reproduce it here, except on one or two special points, thus:—
 “Do you consider that the brigade was formed for any general objects of police as connected with the protection of life and property, or merely with the view of protecting the property in which the ins. cos. were directly interested?” Answer—“Merely with the view of protecting the ins. cos., certainly.” And he added, that to make the Estab. sufficient for the protection of the metropolis, there should be at least double the force they then had. Mr. Browne’s advice has been or is being adopted. [LOND. FIRE ENGINE ESTAB.]

BROWNELL, WILLIAM, was, about 1843, Sec. of *Sheffield F. Office*.

BRUGES, now a city in Belgium, but was for several centuries the capital of Flanders; and became during the 13th and 14th centuries almost the commercial metropolis of the world. It joined the Hanseatic League in 1349. The *Chronicle of Flanders* asserts that on the demand of the inhabitants of this city, in 1310, the Count of Flanders permitted the estab. of a Chamber of Ins., by which the merchants were enabled to insure their merchandize exposed to risk on the sea or otherwise, by means of a certain small sum p.c., as is still practised. But in order that an estab. so useful to merchants should not be dissolved as soon as formed, he prescribed different laws and forms which the assurers as well as the merchants should be bound to observe. Some of the best authorities on the subject, as Pardessus and Reddie, do not regard the authenticity of this portion of the *Chronicle* as established. It is certain that no Ins. Ordin. for Bruges is now known; but this may be explained in the fact that the regulations were so analagous to the *Roles d’ Oleron* as clearly to have been either drawn from them, or, as other writers have affirmed, adopted into them. We do not intend to pursue the subject here, as it must be again considered under HANSEATIC LEAGUE, and other heads. [DAMME, ORDIN. OF.] [FLANDERS.] [NETHERLANDS.] [PORTUGAL.]

BRUNE, HERR R. (Berlin).—He pub. in 1837 a very complete Table of Mort. for both male and female lives, which he had constructed from the records of a Prussian So. for making provisions for widows. The Table threw considerable light on the duration of life in Germany, and has since been very generally adopted by ins. asso. in that country. We shall give the Table and some account of it under GERMAN MORT. TABLES.

BRUNSWICK LIFE ASSU. SO., founded in 1855, with an authorized cap. of £100,000, in 10,000 shares of £10 [power to increase to one million], “for ordinary and declined lives, loans, endowments, and annu.” The prosp. said:

Until a comparatively recent period life assu. appears to have been considered as adapted only to the means and requirements of the wealthier classes of society, and consequently its chief powers and usefulness remained dormant, and the mass of the people of this country continued totally ignorant of the many ways in which it might be applied for their advantage. . . .

In the application of the general principles of life assu., it behoves every newly formed so. to endeavour to benefit by the experience of past results, and to propose a system for transacting bus. even more advantageous to the public than those adopted by its predecessors.

Then there follows an enumeration of the “advantages,” as “half-credit assu.,” “non-forfeiture of pol.” after four prems. paid, “surrender values” after five prems. paid, “deposits of money,” and “loan department.” Next, under “acclimatized lives,” the following:

This office ins. this class of lives at a moderate add. on the English prems., and much below the rates usually required for foreign pol. With but few exceptions, no distinction has hitherto been made between those going for the first time to reside abroad in climates considered prejudicial to health and those who by a long residence have become acclimatized.

Under “annuities,” there was the following:

A more equitable system than has usually been followed with regard to annu. is observed by this So. The constitution and health of the proposed annuitant has, in most cases, not been duly considered; it is obviously unfair that the same annu. should be allowed to the healthy as to the invalid, where each sinks the same amount, and no distinction is made in favour of the person whose expectation of life is positively abridged. Such a system is wholly opposed to the principles of life assu., and has therefore been departed from in this So. . . . In each case the state of the constitution and general health of the proposed annuitant will be taken into consideration in calculating the amount of annu. to be granted.

Rates of prem. had “been specially calculated for this So.” Among the Directors was Mr. Thomas A. Pott; while the Sec. was Mr. J. F. Quartly; and the Consulting Act. Mr. Thomas Walker, B.A. In 1857 the bus. of the So. was trans. to the *Briton*.

BRUSSELS.—We observe that some writers speak of the Ins. or Marine Ordin. of Brussels—as for instance Emerigon, who speaks of the *Loix Carolines*, from the fact that the Ordin. of 1551 was promulgated by the Emperor Charles V. We have spoken of these Ordin. under their proper head, ANTWERP. We observe mention made of a later Ordin. than we have there noted, viz. one promulgated by Philip II. in 1565, but this would only be a later ed. of the Ordin. there named. [BELGIUM.]

BRUUN, W. A., Sec. of *Carriage Ins. Co.* since 1870.

BRYANT, EDWIN W., now or lately Act. of the Ins. Department, State of New York, and one of the most accomplished actuaries in the U. S. In 1861 he became interested in L. ins., and devoted the succeeding five years to studying its principles. In 1866 he became ed. of the *Ins. Chronicle* of Chicago. In 1867 he became Act. of the *Travellers Ins. Co.* of Hartford; in 1868 he occupied a similar position with the *Connecticut Mut.*, one of the leading ins. asso. of the U. S. In 1871 he became Consulting Act. of Ins. Department. During the autumn of that year he visited England, first in connexion with his duties in the Ins. Department; and subsequently for the purpose of investigating the mort. experience of the *European*, in view of a transfer of its connexions to the *New York Life*. On these occasions Mr. Bryant made the acquaintance of many of the leading ins. authorities on this side.

BRYANT, GEORGE SQUIER, Agent in Bristol for the *Scottish Widows', County F., and Accident Ins. Assos.*, for which he has transacted a considerable bus. of the very best class.

BRYDRE, JOHN, was Sec. of *General Benefit L.* for some years preceding 1849.

BRYSON, JAMES, was appointed Superintendent of *Glasgow Fire Brigade* in 1856, having been for several years previously Assistant Supt. He was called to give evidence before the Select Parl. Committee on Fire Prevention in 1862.

BUBBLE [prob. from *Bobbel*, Dutch].—A cant term given to a class of projects for raising money on imaginary grounds, much practised in France and England about the years 1719–20–21. The pretence of these schemes was the raising a cap. for retrieving, setting on foot, or carrying on, some promising and useful branch of trade, manufacture, machinery, or the like. To this end proposals were made out, showing the advantages to be derived from the undertaking, and inviting persons to be engaged in it. The sum necessary to manage the affair, together with the profits expected from it, were divided into shares or subs., to be purchased by any disposed to adventure therein. The most remarkable of the class were those that proposed to have books opened and subs. taken at some future time, as soon as the affair should be ripe for execution and for dividing into shares. But in the mean time money was taken by way of prem. to entitle persons to be admitted subscribers when the matter was to be laid open. In this way several thousand shares were bespoke in a day, and prem. from one shilling to some pounds paid thereon.—*Postlethwayt's Dict.*

Defoe, in his *Essay on Projects*, pub. 1697, says: "And so I have seen shares of joint-stocks, and other undertakings, blown up (by the air of great words and the name of some man of credit concerned) to perhaps £100, for one five-hundredth part or share, and yet at last dwindle to nothing." Again:

Some in clandestine companies combine;
Erect new stocks to trade beyond the line;
With air and empty names beguile the town,
And raise new credits first, then cry 'em down;
Divide the empty nothing into shares,
And set the crowd together by the ears.

BUBBLE ACTS.—(1). The 6 Geo. I. c. 18, enacted in 1720, under the circumstances stated in a following art. (2). Repealed in 1825, by 6 Geo. IV. c. 91, which remitted all such projects to the general prohibition of the Common Law. A temporary measure (enabling, not prohibitive) was enacted in 1834, by 4 Geo. IV. c. 94. This again was repealed in 1837 by 1 Vict. c. 72. [LEGISLATION FOR INS. ASSO.]

BUBBLE INSURANCE PROJECTS.—The first recorded outbreak of Bubble Ins. Projects commenced towards the close of the 17th century, and reached its height about 1720—the South-Sea mania period. Lawson, in his *Hist. of Banking*, gives a list of 185 projects which were put forward in that period, no less than 30 of which had some species of ins. for a pretext. They are all included in the following summary, with some others which he had not noticed:

1. For a General Ins. on Houses and Merchandize, "at the Three Tuns, Swithin's Alley," cap. £2,000,000.
2. For Granting Annu. by way of Survivorship, and providing for Widows, Orphans, etc., at the Rainbow, Cornhill, cap. £1,200,000.
3. For Ins. Houses and Goods from Fire, at Sadlers' Hall, cap. £2,000,000.
4. For Ins. Houses and Goods in Ireland.
5. For securing Goods and Houses from Fire, at the Swan and Rummer, cap. £2,000,000.
6. Friendly So. for Ins.
7. For Ins. Ships and Merchandize, at the Marine Coffee House; cap. £2,000,000.
8. British Ins. Co.
9. For Preventing and Suppressing Thieves and Robbers, and for ins. all persons' Goods from the same, at Cooper's, cap. £2,000,000.
10. Shale's Ins. Co. for Ships.
11. For Ins. Seamen's Wages, at "Sam's Coffee House."
12. Ins. Office for Horses dying natural deaths, stolen, or disabled, Crown Tavern, Smithfield.
13. A Co. for the Ins. of Debts.
14. A rival to the above, for £2,000,000, at Robin's.
15. Ins. Office for all Masters and Mistresses against losses they shall sustain by servants' thefts, etc., 3000 shares of £1000 each, "Devil Tavern."
16. For a General Ins. in any part of England.
17. A Co-partnership for ins. and increasing Children's fortunes, "Fountain Tavern."
18. For carrying on a General ins. from losses by Fire within the Kingdom.
19. Crutchley's Ins. from loss by Garraway's Fishery, "at Jonathan's Coffee House."
20. Mutual Ins. for Ships.
21. Symons' Assu. on Lives.
22. Baker's Second Ed.

of Ins. on Lives. 23. William Helme's, Exchange Alley, Assu. of Female Chastity. 24. For Ins. against Divorces. 25. Wild's Ins. from Housebreakers. 26. Wild's Ins. from Highwaymen. 27. Codner's Assu. from Lying. 28. Plummer and Petty's Ins. from Death by Drinking Geneva. 29. Rum Ins. 30. Marriage and Widows Assu. Co., "Le Brun's." 31. Office of Assu. and Annu. "for every body, by the same." 32. Whilmore's Lottery Annu. 33. Baker's Annuities. 34. Bele's Bottomry. 35. Freek's Annuities. 36. Tiling of Houses and Ins. them. 37. Widows' Pensions. 38. Overall's Fire Office. 39. John's Coffee House, "for Ships." 40. Annuities on Lives. 41. Marine for Ships. 42. Old Insurance. 43. Rose Office from Fires. 44. For lending Money on Stocks, *Annuities*, Tallies, etc.

Maitland, in his *Hist. of Lond.*, pub. 1739, includes in his hist. of Bubble Cos. the two following, which, prob. from feelings of delicacy, Lawson has omitted : 45. An Ins. against the Pox. 46. A Co. for assuring of Maidenheads.

Mr. Lawson tells us, what is indeed pretty generally known, viz. that it was the apparent success of the South-Sea scheme which caused most of these romantic and speculative proposals to be submitted to the public, adding :

Persons of rank of both sexes were deeply engaged in these bubbles; avarice prevailing at this time over all consideration, either of dignity or equity; the gentlemen going to taverns and coffee-houses to meet their brokers, and the ladies to their milliners' and haberdashers' shops for the like purpose. Any impudent impostor, whilst the delirium was at its height, needed only to hire a room at some coffee-house, or other house, near the Exchange, for a few hours, and open a subscription book for something relative to commerce, manufactures, plantations, or of some supposed invention newly hatched out of his own brain.—*Hist. of Banking*.

In a tract., pub. in 1720 (a copy of which is still preserved in the Lond. Institution), entitled, *The Battle of the Bubbles, shewing their several Constitutions, Alliances, Policies, and Wars, from their first Sudden Rise to their late Speedy Decay*, by a Stander-by, the author, after giving a list of the Bubbles which were floated by actual subs. being obtained, says, "and fifty more whose names would blast the reader's eyes to look on them;" and then he gives a summary, which, while it carries exaggeration on its face, appears to have had reference to the projects so excluded from precise enumeration, and of which he speaks as "abortive," viz. "An hundred offices of Ins. against the Venereal Disease, by what title so ever dignified or distinguished, each to raise £500,000." "Fifty different offices for speedy cure—if the Ins. fails." "As many more to cure Gout, Stone, and all other diseases." "A project to ins. uniformity amongst Protestant dissenters." "Another to ins. it amongst the Orthodox." "Thirty different Insurances of Marriages from Divorce; some of them offering very agreeable securities." "Five Millions rais'd to ins. Divorces on the oath of either party, that what they say is reasonable and true."

In our hist. of ANNU. ON LIVES we have stated that a Parl. Committee was appointed on the 22nd Feb., 1720, for the purpose of "inquiring into and examining the several subs. for Fishery Ins., Annu., etc." The committee sat for the first time on 26th Feb.; and in the *Ludlow Postman, or the Weekly Journal*—an exceedingly well informed newspaper of the period—we have the following graphic account of what occurred :

The Committee appointed to inquire into the several subs. called Bubbles (of which Mr. Hungerford is Chairman) sat yesterday morning for the first time, and examined into the four Fishery Subs., all of which, except that called the Grand Fishery (wherein several noblemen are concern'd, and were present to speak in defence of the Charter they have obtain'd), I hear appear to be such real bubbles that the Chairman, who is a very facetious gentleman, made this merry observation, namely, That they were in one sense Apostolical fishermen, as designing not to catch fish, but men. It was intimated that most of the projectors would be "presented."

In the *Daily Courant*, 26th May, [1720], appeared the following :

It is desired that all persons concerned in any subs. taken since the 1st Oct., 1719, calculated for the advantage of Gt. Brit., do meet to-morrow, the 27th inst., at 3 p.m., at the Black Swan Tavern, in Bartholomew-lane, on affairs of the utmost consequence to subscribers.

Coming events cast their shadows before : hence, in *Mist's Weekly Journal, and Saturday's Post*, of 4th June, 1720, we find the following :

As soon as the news was brought to 'Change-ally that the Parl. had ordered the bill for ins. of ships and merchandize at sea to be ingross'd, a general consternation appeared among all the bubble-mongers, insomuch, that who ever could get rid of that sort of traffick, though at any rate, thought himself well off.

The "bill" here spoken of speedily became an Act—the 6 Geo. I. c. 18 (1720), known as the "Bubble Act." But the measure has an add. interest from an ins. point of view, as being that by which the incorporation of the *Royal Exchange and Lond. Assu. Corp.* was authorized. We intend here to confine ourselves to the clauses relating to "bubbles." Sec. xviii. is as follows :

XVIII. And whereas it is notorious that several undertakings or projects of different kinds have at some time or times since the 24th June, 1718, been publicly contrived and practised, or attempted to be practised, within the City of Lond. and other parts of this kingdom, as also in Ireland, and other His Majesty's dominions, which manifestly tend to the common grievance, prejudice, and inconvenience of great numbers of Your Majesty's subjects in their trade and commerce, and other their affairs; and the persons who contrive or attempt such dangerous and mischievous undertakings or projects, under false pretences of publick good, do presume according to their own devices and schemes to open books for publick subs., and draw in many unwary persons to subscribe therein towards raising great sums of money, whereupon the subscribers or claimants under them do pay small proportions thereof, and such proportions in the whole do amount to very large sums; which dangerous

and mischievous undertakings or projects do relate to several fisheries, and other affairs, wherein the trade, commerce, and welfare of Your Majesty's subjects, or great numbers of them, are concerned or interested: And whereas in many cases the said undertakers or subscribers have since the said 24th June, 1718, *presumed to act as if they were corporate bodies, and have pretended to make their shares in stocks transferable or assignable, without any legal authority, either by Act of Parl. or by any charter from the Crown for so doing*; and in some cases the undertakers, or subs., since the 24th June, 1718, have acted or pretended to act under some charter or charters formerly granted by the Crown for some particular or special purposes therein expressed, but have used or endeavoured to use the same charters for raising joint-stocks, and for making transfers or assignments, or pretended transfers or assignments, for their own private lucre, which were never intended or designed by the same charters respectively; and in some cases the undertakers or subscribers since the said 24th June, 1718, have acted under some obsolete charter or charters, although the same became void or voidable by non-user or abuser, or for want of making lawful elections, which were necessary for the continuance thereof; *and many other unwarrantable practices (too many to enumerate) have been, and daily are, and may hereafter be contrived, set on foot or proceeded upon, to the ruin and destruction of many of Your Majesty's good subjects, if a timely remedy be not provided*!

Then it is enacted, that after 24th June, 1720, all undertakings tending to the prejudice of trade, and all subs., etc., thereto, or presuming to act as corporate bodies without lawful authority, and all acting under obsolete charters, etc., shall be deemed illegal and void, and all such undertakings deemed "public nuisances."

It was, however, provided that the Act should not extend to any undertakings, "settled, estab., or practised in point of time," before the said 24th June, 1718; nor should it extend to the South Sea Co.

Immediately after the passing of the Act the King issued a proclamation, embodying the chief provisions of that measure, and concluding as follows:

And whereas we are deeply sensible of the many mischievous consequences that must inevitably ensue from the unwarrantable practices in the said Act mentioned, by ensnaring and defrauding unwary persons to their utter impoverishment and ruin, by taking off the minds of many of our subjects from attending their lawful employments, and by introducing a general neglect of trade and commerce upon which the wealth and prosperity of our kingdom so much depend, etc. And we being determined, for the reasons aforesaid, to cause the said Act to be effectually put in execution; but being also willing and desirous that none of our loving subjects should be ignorant of the same; have, etc., etc.

At a meeting in the Privy Council Chamber at Whitehall, on the 12th July, 1720—present, the Lords Justices in Council, many of the preceding projects were presented, declared to be illegal, and ordered to be abolished accordingly. This was the termination of the first crusade against Bubble Ins. projects.

The Act of 1720 remained in force for more than a century—down to 1825, when, it having been determined to rescind the monopoly given to the two Ins. Corporations under it, it was entirely repealed, by the 6 Geo. IV. c. 91. The act had never applied to Ireland.

In 1836 the era of modern Ins. Bubbles set in, with the launching of the *Independent West Middlesex* scheme, of which a full hist. will be given under its alphabetical head.

In 1844 was enacted the Joint-Stock Cos. Registration Act., 7 & 8 Vict. c. 110, which furnished considerable facilities for the launching of new projects; and accordingly a very considerable crop was brought forward during the next succeeding years. These will be spoken of more in detail under the names of their several promoters, Mr. Augustus Collingridge, Mr. G. R. H. Denison, and others. This Act was not passed until after a Parl. Com. had sat and collected evidence; and this very Committee in its report gave the best definition we have seen of modern bubble cos., classified under three heads, viz.:

1. Those which, being faulty in their nature, inasmuch as they are founded on unsound calculations, *cannot succeed by any possibility*, 2. Those which, let their objects be good or bad, are so ill constituted as to render it *probable* that the miscarriages or failures incident to mismanagement will attend them; and 3. Those which are faulty, or fraudulent in their object, being started for no other purpose than to create shares for the purpose of jobbing in them, or to create, under pretence of carrying on a legitimate bus., the opportunity and means of raising funds, to be shared by the adventurers who start the co.

The proceedings of promoters under the Act of 1844 led to the appointment of a Parl. Committee in 1853; but the Committee reported that the general condition of the then existing Cos. was more satisfactory "than they had been led to believe before they entered upon the inquiry," adding:

No doubt instances of great abuses and flagrant frauds have been disclosed by the witnesses examined, but in general these consisted of an open violation of all law, more akin to swindling than to regular trade, and such as it would be difficult for any legislature to prevent, so long as private persons exercise so little precaution in the conduct of their own affairs. . . .

The fact is Parl. could not stop the promotion of Bubble Ins. enterprises. That was a task reserved for, and accomplished by, a far less pretentious authority, viz. the *Post Magazine*, and its late fearless and determined editor, Mr. J. Hooper Hartnoll, whose name will always be associated with Ins. Hist. for the services he thus rendered. [LIFE INS., HIST. OF.] [GAMBLING INS.]

BUBONOCELE.—Inguinal hernia; hernia in which a part of the bowel passes through the abdominal ring.—*Hoblyn*.

BUCENTAUR.—The name of the State Galley in which the Doges of Venice used to proceed to "wed the Adriatic." From the 12th to the 18th century they annually, on Ascension Day, sailed over a portion of the Adriatic, and dropping a ring into the sea, espoused it in the name of the Republic with these words, "*Desponsamus te, mare, in*

signum veri perpetuæ dominii. Byron, in his *Childe Harold's Pilgrimage*, refers to the discontinuance of this famous custom as follows :

The spouseless Adriatic mourns her lord ;
And, annual marriage now no more renew'd,
The Bucentaur lies rotting unrestored,
Neglected garment of her widowhood !

BUCHANAN, Prof. A., M.D., University of Glasgow.—He read a paper before the Brit. Asso., at the Glasgow meeting in 1855 : *On the Physiological Law of Mort., and on certain Deviations from it observed about the Commencement of Adult Life.* An abstract of this most interesting paper is given in the *Assn. Mag.* [vol. vi., p. 67]. One extract will indicate the scope of his inquiry :

Of the external causes which occasion the diversities in the law of mort. in different communities, there are some which may be named *conspiring causes*, as they act in conjunction with the physiological causes above mentioned, and magnify their effects ; while there are others of an *interfering kind*, that disturb the physiological results. To the latter class belong those causes that operate solely, or with peculiar intensity, at certain periods of life. Thus, a war occasions devastation among the young and strong, and disturbs the normal course of mort. Causes, again, which operate more equably at all ages, are of the conspiring class ; for the physiological state of the body, varying with age, assists or resists their action. Thus, the extremes of temperature tell chiefly on the infirm bodies of the young and the old, while persons in the vigour of life resist their influence.

We quote from this paper again under various heads, as LAW OF MORT. ; LAW OF NATURAL DECAY, etc.

In 1856 Mr. John Reid, surgeon, Glasgow, read before the Inst. of Actuaries a paper : *On the Progressive Rates of Mort., as occurring in all ages, and on certain Deviations ; also on Dr. Buchanan's " Physiological Law of Mort.,"* in which some of the views of Dr. Buchanan are refuted.

BUCKETS.—The use of Buckets in connexion with the extinguishing of fires dates from the very earliest times. They have been made of metal, leather, wood, indiarubber, canvas. The last two materials were first applied in the U. S. So important did Mr. Braidwood consider the use of buckets in connexion with the prompt extinguishment of fires, that at one period he made a canvas bucket part of the equipment of each fireman. It was folded and suspended to his waist-belt.—*Young, Fires, Fire Engines*, etc.

BUCKLE, H. T., pub. in 1857 his learned work, the *History of Civilisation*, wherein he remarked upon the striking uniformity usually exhibited by classes of phenomena, as births, marriages, deaths ; and even in things apparently depending upon mere caprice, as the number of undirected letters ann. sent to the Post Office ; or those which appear to depend on the most capricious and irregular causes, such as murders and suicides. He proceeds to draw certain moral conclusions from the fact of this uniformity, viz. the existence of certain moral laws, by which a definite proportion of the community is always impelled to such acts. We quote his remarks under their appropriate heads.

BUFFON, COUNT DE, MORTALITY TABLE OF.—In 1749 this famous writer pub. his *Natural History, General and Particular*, the 2nd vol. of which he devoted to the consideration of the generation, growth, development, and ultimate causes of death of the human species. He concludes this part of his labours as follows :

Having thus treated of the history of life and death with regard to the individual, let us now consider both in relation to the whole species. Man dies at every age ; and though the duration of his life be longer than that of most animals, yet it is unquestionably more various and uncertain. Attempts have recently been made to ascertain these uncertainties, and by obs. to fix some standard with regard to the mort. of mankind at different periods of life. If these obs. were sufficiently numerous and exact, they would be of great utility in determining the number of people, their increase, the consumption of provisions, etc. Many authors have written with ability on this subject. M. de Parcieux, of the Academy of Sciences, has lately pub. an excellent work for regulating tontines and annu. But as his principal object was to calculate the mort. of annuitants, and as such persons are particularly pitched upon for their apparent strength of constitution, his calculations cannot be applied to mankind in general. For the same reason, his curious T. of mort. of the different orders of religious must be confined to their proper objects. Halley, Graunt, Kersseboom, Simpson, etc., have also given T. of the mort. of the human species. But as their obs. have been limited to the B. of mort. in a few parishes of Lond., Breslau, and other large towns, they can afford little information as to the general mort. of mankind. To make complete T. of this kind, it is necessary to scrutinize the parish regis., not only of Lond., Paris, etc., where there is a perpetual ingress of strangers and egress of natives, but likewise those of the country, that, by comparing the results of both, general conclusions may be formed. M. Dupré de St. Maur, a member of the French Academy, has executed this plan upon 12 parishes in the country of France, and three in Paris. Having obtained his permission to pub. his tables, I do it the more cheerfully, as they are the only calculations by which the prob. of human life in general can be ascertained with any degree of certainty !

The concluding italics are ours. They indicate the implicit confidence with which Buffon regarded the table. The 12 country parishes with the number of deaths observed upon in each were as follows :

Clemont	1391	Lestiou	223	Thury	262	Villeneuve	131
Brinon	1141	Vandure	672	St. Amant	748	Goussainville	1615
Jouy	588	St. Agil	954	Montigny	833	Ivry	2247

The total deaths in these parishes, 10,805. The 3 parishes in Paris with number of deaths observed upon were St. André, 1728 ; St. Hippolyte, 2516 ; St. Nicolas, 8945 ; total town deaths, 13,189 ; giving the grand total of deaths, 23,994. These are all arranged in cols., showing (1) in what year of life the death occurred, (2) the total number of deaths

under 1 year, under 2 years, etc., (3) the number of persons entering into their 2nd, 3rd, and other years. The obs. on the country and town lives are kept distinct. After giving the results in detail, the Count de Buffon says :

Many useful conclusions might be drawn from the above T. of M. Dupré; but I shall confine myself to those which regard the prob. of the duration of life. In the cols. under the years 10, 20, 30, 40, 50, 60, 70, 80, and other round numbers, as 25, 35, etc., there are in the country parishes more deaths than in the preceding or subsequent cols. This is owing to the deaths not being justly regis., most country people being unable to ascertain their ages within less than 2 or 3 years. If they die at 58 or 59, they are regis. at 60, and so of other round numbers. But this irregularity gives rise to no great inconvenience, as it can easily be corrected by the manner in which the numbers succeed each other in the tables.

It appears from the T. of the country parishes, that one half of the children die nearly about the end of the fourth year; but from the Paris T. 16 years are necessary to produce the same effect. This great difference proceeds from a general practice of the Parisians, who send their children to be nursed in the country, which necessarily increases the number of deaths during the first years of infancy. In the following calculation I have estimated the prob. of the duration of life, from a combination of both T., which must, therefore, make a very near approach to the truth.

It seems therefore that the table of expectations was actually deduced by the Count de Buffon from the materials supplied, as already stated, by M. Dupré. Here is the table :

Duration of Life.			Duration of Life.			Duration of Life.			Duration of Life.		
Age.	Yrs.	Mo.	Age.	Yrs.	Mo.	Age.	Yrs.	Mo.	Age.	Yrs.	Mo.
0	8	0	22	32	4	44	19	9	65	8	6
1	33	0	23	31	10	45	19	3	66	8	0
2	38	0	24	31	3	46	18	9	67	7	6
3	40	0	25	30	9	47	18	2	68	7	0
4	41	0	26	30	2	48	17	8	69	6	7
5	41	6	27	29	7	49	17	2	70	6	2
6	42	0	28	29	0	50	16	7	71	5	8
7	42	3	29	28	6	51	16	0	72	5	4
8	41	6	30	28	0	52	15	6	73	5	0
9	40	10	31	27	6	53	15	0	74	4	9
10	40	2	32	26	11	54	14	6	75	4	6
11	39	6	33	26	3	55	14	0	76	4	3
12	38	9	34	25	7	56	13	5	77	4	1
13	38	1	35	25	0	57	12	10	78	3	11
14	37	5	36	24	5	58	12	3	79	3	9
15	36	9	37	23	10	59	11	8	80	3	7
16	36	0	38	23	3	60	11	1	81	3	5
17	35	4	39	22	8	61	10	6	82	3	3
18	34	8	40	22	1	62	10	0	83	3	2
19	34	0	41	21	6	63	9	6	84	3	1
20	33	5	42	20	11	64	9	0	85	3	0
21	32	11	43	20	4						

The Count then proceeded to draw deductions from the T. as follows :

From this T. it appears that a new born infant, or a child of 0 age has an equal chance of living 8 years; that a child of 1 year will live 33 more; that a child of 2 will live 38 more; that a man of 20 years will live 33 and 5 months more; and that a man of 30 years will live 28 more, etc.

It may be further observed—(1) that 7 years is the age at which the longest duration of life is to be expected; for there is then an equal chance of surviving 42 years 3 months; (2) that at 12 years one-fourth of life is expired, since we have no reason to hope for above 38 or 39 years more; (3) that at 28 or 29, we have lived one-half of our days, since there are only 28 more to be expected; and lastly, that at the age of 50, three-fourths of life are gone, the remaining chance extending only to 16 or 17 years longer.

But these physical truths, however mortifying, may be alleviated by moral considerations. The first 15 years of our existence may be regarded as nothing; everything that passes during this long period is either obliterated from the memory, or has so little connexion with the views and objects which afterwards occupy our attention, that it ceases entirely to be interesting. The train of our ideas, and even the nature of our existence, suffer a total change. We begin not to live, in a moral sense, till after we have learned to arrange our thoughts, to direct them towards futurity, to assume a kind of consistency of character, similar to that state at which we are ultimately destined to arrive. Considering the duration of life in this point of view, which is the only real one, at the age of 25 we have passed one-fourth of our days; at the age of 38 one-half; and at the age of 56 three-fourths.

Several translations of Buffon's works into English have been made. We have here quoted Smellie's 2nd ed., 1785.

In 1753 Kerseboom pub. *A view of the relation between the celebrated Dr. Halley's Tables, and the notions of M. de Buffon for estab. a rule for the prob. duration of the life of man.*

In 1777 Buffon pub. in the 4th vol. of the Supplement to his *Natural History*, his famous *Essai d'Arithmétique Morale*, where it occupies 103 quarto pages. Gouraud says that the Essay was composed about 1760. [PROBABILITIES.]

BUGGE, CHEVALIER THOMAS (born 1740), Professor of Astronomy at the University of Copenhagen, and a Fellow of the Royal Danish Academy of Sciences. He pub. a treatise on Mathematics. Some notice of his labours may be found in Dr. Price's *Rev. Payments* [6th ed. vol. 2, p. 439]. He, in conjunction with Prof. Lous, prepared rates for the *Danish Estab for. Widows* (No. 2).

BUILDERS' BANKING, GUARANTEE, AND ASSU. CO.—This Co. was projected in 1845, but did not proceed beyond provisional regis. Its proposed objects were banking, ins. property, and guaranteeing accounts.

BUILDER'S ESTIMATE.—An estimate made by a builder, showing in detail the actual cost of repairing or replacing a building or property destroyed or damaged by Fire. Most fire pol., properly enough, give the office the option of rebuilding or restoring, in case an agreement cannot be arrived at as to the amount of damage to buildings.

BUILDERS' FIRE AND LIFE INS. CO.—A project under this title was regis. in 1845, but it did not proceed beyond provisional regis.

BUILDER'S RISK [FIRE].—A risk on a building while the same is in process of being built or repaired. [CARPENTER'S OR BUILDER'S PRIVILEGE.]

BUILDING.—A house or other erection. The law as to setting fire to dwelling-houses and other buildings we have already explained fully under ARSON.

BUILDING ACTS.—With a view to prevent as much as possible the damage and inconvenience resulting from fires in narrow and crowded streets, and the destruction of mercantile and other stores, Acts for regulating the construction and alteration of buildings—called "Building Acts"—have from time to time been passed. The operation of these Acts is confined to the districts to which they particularly relate. *Belfast* has a Building Act, *Liverpool* also, and *Manchester* and *Salford*; while the metropolis has been subjected to quite a number of such Acts, most of which we shall have to speak of under FIRE PREVENTION and FIRE PROTECTION. These Acts have an important bearing upon fire ins.; upon the protection of life from fire; and even upon the sanitary condition of the people.

The Building Act of 1774—14 Geo. III. c. 78—has a special bearing on F. ins. Sec. 85 enacts:

It may be lawful for the directors and governors of the several ins. offices, and they are hereby authorized and required upon the request of any person or persons interested in or entitled unto any house or houses or other buildings which may hereafter be burned down, demolished or damaged by fire, or upon any grounds of suspicion that the owner, occupier, or any other person, etc., who shall have insured such house or other building have been guilty of fraud, or of wilfully setting their house or other building on fire, to cause the ins. money to be laid out and expended, as far as the same will go, toward rebuilding, reinstating, or repairing such house or houses or other buildings so burnt down, etc., unless the party claiming such ins. money shall, within 60 days next after his claim is adjusted, give sufficient security to the governors or directors of the ins. office where such house or houses or other buildings are ins., that the same ins. money shall be in that time settled and disposed of to and among all the contending parties, to the satisfaction and approbation of such governors and directors.

This Act was repealed by the Metropolitan Fire Brigade Act, 1865, except as to the preceding sec. and sec. 86.

Mr. H. W. Porter, B.A., said in 1860, speaking of the health of London compositors:

If the metropolitan inspectors of buildings were vested with some discretionary powers to see to the appropriateness of the buildings under their *surveillance*, as respects their answering satisfactorily, in a sanitary point of view, the objects for which they were intended, it is possible that some diminution of the evils I have pointed out might be the result.—*Assu. Mag.* ix., p. 29.

BUILDING LEASE.—A demise of land for a long term of years, the lessee covenanting to erect certain edifices thereon according to specification. The leases are granted subject to the payment of an ann. *ground-rent*, large or small, according to the agreement and term of years—a long lease being generally subject to a heavier ground-rent than one in a similar location for a shorter term of years. On the termination of the lease, the ground reverts to the original lessor, his successors, and assigns, together with all buildings and erections thereon.

In such leases there is always inserted a covenant to insure, and keep insured, for at least a certain minimum amount, the buildings erected. This is called technically the *covenant to ins.* In many leases particular ins. offices are named, in which the ins. is to be made. Some of the F. offices obtain a very considerable and lucrative bus. of this sort. It is a portion of the financial management of a F. office to invest its funds in view of securing such a connexion. But the proverbial dangers of "playing with fire" attach strongly to this mode of investment, and extreme care and a large experience are alike necessary in the conduct of such investments.

We shall treat of the legal aspect of the case under COVENANT TO INSURE. Also see LEASEHOLDS.

BUILDING SOCIETY INSURANCES.—There are happily many thousands of persons, in the middle and humbler ranks of life, who are becoming the owners of their dwelling-houses through the aid of building sos. The usual method of proceeding is that the so. lends its member the money to purchase or build, repayable by regular instalments, payable monthly, quarterly, or annually, over a given number of years, the house in the mean time being mortgaged to the so. as security. The property is usually mortgaged in the first instance up to within a narrow margin of its value. Generally all goes well so long as the borrower continues alive and in health. If sickness, accident, or death overtake him—and these are unprovided for—all is generally lost. By the application of L. ins. to these transactions, they may now be made safe at a small ann. cost.

Temporary pol. of ins. can be effected on the life of the borrower, in amount equal to the loan, and for the number of years it has to run, upon this principle, viz. that at the

end of each year the insured shall be allowed to drop so much of his pol. as is equivalent to the portion of the debt cleared off in the year, and pay, consequently, in the succeeding year, a diminished prem., with the further advantage that at the end of each year a portion of the prems. which have been paid on the dropped part of the pol.—consistent with the risk incurred—shall be returned to the insured. The ann. rates required to insure each £100 by such a temporary pol. are about as follows :

Age.	For 1 Year.	For 7 Years.	For 10 Years.	For 14 Years.
20 ...	£0 18 10 ...	£1 0 3 ...	£1 1 3 ...	£1 2 7
30 ...	£1 4 4 ...	£1 6 2 ...	£1 7 8 ...	£1 9 6
40 ...	£1 11 7 ...	£1 14 1 ...	£1 16 7 ...	£1 18 10

Further details will be given under MORTGAGE INSURANCES.

In 1846 Mr. J. H. James pub. *A Treatise on Benefit Building Sos.*, wherein he considered their profitable union with L. ins. inst. from a practical point of view. He returned to the subject in 1849.

In 1849 Mr. Arthur Scratchley pub. his well-known treatise on Building Sos., and therein he included a chap. on "Life or Fidelity Assu. applied to Building Sos."—(1) As regards borrowing members ; (2) L. assu. applied to investors ; (3) Building so. shares as security for fidelity in situations of trust ; (4) on the joint combination of L. and fidelity assu. in co-operation with the ordinary principles of building sos.

The *Briton Life*, 1853, introduced a system of *building assu. pol.* in the following form :

To those who prefer the possession of house or other property, or desire the means of profitably investing small sums, all the advantages of a building so. are presented, with the following important improvements upon the ordinary system : 1. The subs. which purchases the property also assu. the life of the purchaser for the same value ; so that in case of death, at any time prior to the completion of his subs. term, his family is entitled to the property without further payment. 2. The purchase-money is advanced, if required, immediately the first subs. is paid into the office.

In this case the asso. did not merely issue pol. guaranteeing the repayment of advances made by other sos. in the case of death of the borrower, but actually undertook the functions of a building so. by making the advances itself—the ins. being a leading element. [MORTGAGE INSURANCES.]

BULKHEAD.—The sea-term for any partition, as of wood, canvas, or other material. Modern steamers for ocean traffic are rendered additionally safe by being divided, in process of construction, into several compartments by means of water-tight bulkheads.

BULLER, W., was Sec. of *Suffolk Alliance* about 1843.

BULLION.—Uncoined gold and silver in the mass. Large ins. are sometimes made under marine pol. covering the transport of bullion. Some considerable frauds have been perpetrated under pretence of such insurances.

BULMAN, THOMAS, a master mariner, was prosecuted in 1869 for a series of frauds upon marine ins. offices.

BULMER, CAPTAIN JOHN, issued proposals from the "Office of Ins." in 1643, for the "blowing-up" of a boat and a man over Lond. Bridge." Full details of this scheme will be given under INS. WAGERS.

BUMSTED, D. A., F.I.A., Chief Clerk in *General Rev. and Investment Co.*, which office he entered in 1856. He communicated to the Inst. of Act., in 1869, the translation of a paper by Herr F. Hopf, of the *Gotha Life*, *Suggestions for Legislation to Regulate the Calculations and Investment of the Reserve in Life Assu. Cos.* The trans. is printed in vol. xv. of *Assu. Mag.*

BUNN, ARTHUR R., was Sec. of the *England Life and Invalid Hazard* during its short career.

BUNYON, CHARLES JOHN, M.A. ; F.I.A., and a Vice-President of the Inst. ; Barrister-at-Law ; Act. of the *Norwich Union L.* since 1863 ; and for many years Agent of the *Norwich Union Fire*, in Lond. He was educated at Harrow, and took his B. A. degree at Cambridge in 1843.

Mr. Bunyon has contributed largely to Ins. literature. To the 1st vol. of *Assu. Mag.* [1850-1] he contributed two papers : (1). *On the Liability of a Tenement for Damage done to that of a Neighbour by Fire kindled through his own or his Servant's Negligence.* (2). *Concerning the Proper Stamps upon Assignments of Pol. of Ins.*

In 1852 he gave evidence before the Parl. Committee on F. Sos.

In 1853 he read before the Inst. of Act. a paper, *Concerning the Renewal of Leaseholds for Lives or Years that have been the Subject of Settlement.* [Vol. iii. of *Assu. Mag.*]

In 1854 he pub. *The Law of Life Assu. ; including the Formation, Constitution, and Amalgamation of Assu. Cos. ; Assignments and Equitable Liens arising in Connexion with Life Pol.* A 2nd ed. was pub. in 1868, with "an introductory chap. on the Amendment of the Law." This is now regarded as a standard work, and is frequently referred to in these pages.

In 1859 he pub., *Letter to the Members of the Equitable So. respecting the coming Bonus, and their Prospects for the Future.* In 1860 a *Supplement* thereto.

In 1867 he pub. *The Law of Fire Ins.* This also has become a standard work, and is from time to time quoted in these pages.

In 1870 he pub. a pamph., *On the Liquidation of Insolvent Ins. Offices* ; and in the same year another pamph., *On the L. Assu. Act, 1870, with a Commentary on L. Ins. Legislation.*

In 1872 he read a paper before the the Inst. of Act., *On the Valuation of Claims upon Current Pol. in the Liquidation of a Life Office, with Reference to the Decisions in Bell's and Lancaster's Cases*. The paper will be found in vol. xvii. of *Assu. Mag.*

Mr. Bunyon was, we believe, mainly instrumental in revising the constitution of the *Norwich Union* Life a few years since; and under his advice the new bonus system of the office was then adopted.

Combining his legal with his practical ins. knowledge, Mr. Bunyon prepared for his office, in the autumn of 1867, the scheme of "settlement policies," which will be fully detailed under that head. The idea is to bring life pol. more generally into use for the protection of families, without the cost and formalities of a marriage settlement.

Mr. Bunyon gave evidence before the Select Parl. Committee on *Fire Protection*, in 1867. The following is an outline of his evidence: By the Common Law every person is responsible for his fire, but that Common Law is modified by the Statute Law, which provides that no person shall be responsible for any fire which shall accidentally begin on his premises. It was held that 'accidental' could not mean anything intentionally done. The recent Act, which consolidates the law relating to felonies, applies the same penalties for setting on fire with intent to defraud as for arson. By the old Building Act servants were made responsible and punishable in case of fire occurring through their culpable negligence; but that sec. was repealed by the Metropolitan Building Act, 1865, and is no longer law. "But if a man sets fire to his own house, you would not say there was malice, would you?" If he was not insured, I should say it was madness. He (Mr. Bunyon) would not have an investigation into every fire—"only whenever crime could be imputed or supposed." He would not have the ins. offices take part in the investigation—certainly not. He did not think the coroner would do for the investigator. "It is a matter which belongs to the police force, and no special officer is desirable." The offence is not punishable by death unless the death of some other person ensues. "The evidence before coroners' inquests is of the loosest description."

BUNYON, ROBERT JOHN, father of the preceding, was for many years Sec. and Agent in Lond. for the *Norwich Union* offices; and was the founder of the *Norwich Union Reversionary Co.* He was for some years on the Committee of Management of the Lond. Fire Engine Estab.; he was also a member of the Committee which undertook the preparation of the *Experience Mort. T.* (No. 1). He died in 1844, aged 56.

BUOY.—A floating body formed of wood, or more often now of iron plate, in the form of a cone, moored over a certain spot, to indicate the situation of a shoal or sand-bank, and to mark out the course a ship is to steer. Small iron buoys are often used for the purpose of indicating the location of a ship's anchor, or marking salvage, etc.

BURBAGE, JOHN, was for some years Superintendent of Agents for *National Guardian*.

BURDEN OF PROOF (Lat. *Onus probandi*).—It is a fundamental principle of evidence that the *burden of proof lies with the accuser*; that is to say, the burden of proof lies on the person who has to support his case by proof of a fact which is peculiarly within his own knowledge, or of which he is supposed to be cognizant. The legal maxims which apply are—*Ei incumbit probatio qui dicit, non qui negat*, and *Affirmanti non neganti incumbit probatio*.

BUREAU VERITAS.—The French register of ships. It is as great an authority in France, as to French shipping, as Lloyd's register is in England as regards English shipping.

BURGESS'S ANNUITIES.—A scheme for raising a cap. of £1,200,000, for securing annuities, settling of jointures, and assu. of lives, put forward towards the close of 1719. The project afterwards became known as Sir James Hallet's, in consequence of he, with others, applying for a charter of incorp. in the following year.

In the *Daily Courant* of 13th July, 1720, appeared the following:

All persons possessed of the receipts for raising £1,200,000, to be a fund for granting annu., etc., signed by Mr. Thomas Burges, and Mr. Henry Symonds, are desired to come to the Virginia Coffee-house, in Cornhill, to-morrow and Friday, in the morning, any time between the hours of 8 and 12, to receive back 2s. p.c., being the remainder unexpended of the 2s. 6d. p.c. deposited.

The charter being refused, the scheme died out. [ANNU. ON LIVES.] [LIFE INS., HIST. OF.]

BURGLARY INS. CO.—This Co. was projected in 1865, and regis. with a preliminary cap. of £2000. Mr. J. H. Tilley was the promoter.

BURGOMASTER.—A German Mayor, or *Burgomeister*.

BURGOS.—An ancient city of Old Castile, Spain. From the middle of the 15th century this was a place of considerable trade. It had a Casa de Contratacion, or Mercantile Corp.; and also a Consular Jurisdiction. The city had some very early maritime Ordin. These were collected and formally promulgated, under the title of the Ordin. of Burgos, and with the sanction of Charles V. in 1563. They treat not only of the fitting out and loading of vessels, but also of the forms of letters, or bills of exchange, and of marine ins. The last 33 chapters relate entirely to ins. These imply that marine ins. was practised in that State from a very early period.

BURIAL [BURYING].—The act of interring the dead. The customs incident to burial vary in different countries, and have changed with the progress of time. Abraham buried Sarah in the Cave of Machpelah, B.C. 1860. The Greeks had their burial-places at a

distance from their towns ; the Romans near the highway—hence it is supposed arose the practice of inscriptions. Places of burial were consecrated under Pope *Calixtus* I. A.D. 210. Expense of burials regulated by the Constitution of Justinian A.D. 537. The first Christian burial-place is said to have been instituted A.D. 596. Burials in cities instituted 742 ; in churchyards 758. Vaults were first erected in chancels at Canterbury 1075. Parochial regis. of burials, etc., instituted by Thomas Cromwell (Earl of Essex), about 1538. By stat. 18 Charles II. (1666), and 30 Charles II. c. 3 (1678), all persons were to be buried in woollen shrouds—penalty for burying in linen [repealed in 1814 by 54 Geo. III. c. 108]. Tax on burials imposed by 6 & 7 Wm. III. c. 6 (1694), and continued by Act 8 & 9 Wm. III. c. 20, s. 14. [MORTALITY TAX.]

The interment of the dead beneath and around churches has been called a “distinctive feature of Christian burial,” but the persons who make this assertion forget that burial in the time of Christ was extramural. The widow of Nain was following her son out of the city ; Lazarus was interred in a cave beyond Bethany. . . . The Holy Sepulchre was in a garden outside Jerusalem. . . . The truth is that we owe the introduction of “Christian Burial” to the superstitious observances of the Dark Ages.—*Baker*.

By 48 Geo. III. c. 75 (1808), the burial of dead bodies cast on shore is enforced.

By the 4 Geo. IV. c. 52 (1823), the barbarous mode of burying persons found *felo de se* was abolished. The Act directs that their burial shall take place without any marks of ignominy, privately in the parish yard, between the hours of 9 and 12 at night, under the direction of the coroner.

Mr. Rickman, in his Report on Pop., 1831, speaking of the defective returns of the parish regis., says : “In the metropolis about 8000 burials are thus deficient ; in Manchester 4000 ; and other populous places labour under the same defect—in what degree remains for investigation,” etc.

The 2 & 3 Wm. IV. c. 75 (1832), for regulating schools of anatomy, was intended to prevent the stealing of dead bodies, which is contrary to common decency and abhorrent to the general sentiments and feelings of society.

The 6 & 7 Wm. IV. c. 86 (1836), was passed to regulate the regis. of deaths. [DEATHS, REGISTRATION OF.]

In 1852 a most important measure was enacted—the 15 & 16 Vict. c. 85—*An Act to Amend the Laws concerning the Burial of the Dead in the Metropolis*. This Act prohibited intramural burials in Lond. ; the same regulation was not made general in E. and W. until 1853 ; in Scotland until 1855 ; in Ireland until 1856.

Mr. Thomas Baker, in his well-known work, *The Laws of Public Health* (1865), says :

During the twelve years since the passing of the first Burial Act in 1852, a great sanitary revolution, as regards the burial of the dead, has quietly taken place in this country. Within this period some 400 local Burial Boards have been constituted, and there is scarcely a market town of any consequence which has not already provided, or is now engaged in providing, adequate means for the decent interment of its dead beyond the dwellings of the living. During these twelve years also, about 500 Orders in Council have been issued, by which near 4000 old burial-grounds belonging to religious professions of all denominations have either been closed or placed under regulation. Perhaps the majority of these consisted of mere scraps of ground wedged in, as it were, between densely inhabited districts ; each church or chapel being surrounded with its own precinct of corruption.

The following are all the more recent Acts relating to burials in Gt. Brit. :

1853—16 & 17 Vict. c. 134—*An Act to Amend the Laws Concerning the Burial of the Dead in England beyond the limits of the Metropolis, and to Amend the Act concerning the Burial of the Dead in the Metropolis*.

1854—17 & 18 Vict. c. 87—*An Act to make further Provision for the Burial of the Dead in England beyond the limits of the Metropolis*.

1855—18 & 19 Vict. c. 128—*An Act further to Amend the Laws concerning the Burial of the Dead in England*.

1857—20 & 21 Vict. c. 81—*An Act to Amend the Burial Acts*.

1859—22 Vict. c. 1—*An Act more effectually to Prevent Danger to the Public Health from Places of Burial*.

1860—23 & 24 Vict. c. 64—*An Act to make further provision for the expenses of Local Boards of Health and Improvement Commissioners acting as Burial Boards*.

1862—25 & 26 Vict. c. 100—*An Act to authorise Improvement Commissioners acting as Burial Boards to Mortgage certain Rates for the purposes of the Burial Acts*.

1864—27 & 28 Vict. c. 97—*An Act to made further Provision for the Regis. of Burials in England*.

1871—34 & 35 Vict. c. 33—*An Act to Explain and Amend the Burial Acts*.

The Diseases Prevention Act, 1855—18 & 19 Vict. c. 116—provides that when any Order in Council is made, putting in force the provisions of the Act for the better prevention of diseases, the Privy Council may issue regulations for the speedy interment of the dead. [BILLS OF MORT.] [CEMETERIES.] [DEATHS.] [FUNERALS.] [PLAGUES.]

BURIAL CLUBS.—Societies which, in consideration of a small monthly or ann. payment, in the nature of an ins. prem., paid by the members during life, provide a given sum at the death of each member for defraying the expenses of burial. The allowance is generally from £5 to £10 for an adult member. Nearly all friendly sos. make the burial or “funeral allowance” a distinct feature.

Burial clubs are of great antiquity. Mr. Kenrick has shown us that they existed among the Romans. He discovered a monument at Lanuvium, a village about 10 miles from Rome, on the Appian road. This town was famed for its ancient worship of the "Saving Goddess," Juno Sospita. The inhabitants formed a college, during the reign of the Emperor Hadrian, for paying divine honours to Diana and Antinous; and with this college they formed a burial club, "not forgetting the festivities which formed so important a part of all acts of religion among the Romans." Laws were drawn up for the government of the club; and, that all might know them, they were engraved on a slab of marble, forming a portion of a monument. The following is the substance of these laws or rules, as rendered by Mr. Kenrick:

An amphora of good wine was to be presented to the club by a new member, the sum of about 100 sesterces (about 15s.) to be paid as entrance money, and five asses (little more than 2d.) per month as subs. Their meetings were not to take place oftener than once a month. If any one omitted payments for — months [the marble is here mutilated] no claim could be made, even though he had directed it by will. In case of the death of one who had paid his subs. regularly, 300 sesterces (2l. 5s.) were allotted for his funeral expenses, out of which, however, 50 were to be set apart for distribution at the cremation of the body. The funeral was to be a walking one. If any one died more than 20 miles from Lanuvium, and his death was announced, three delegates from the college were to repair to the place where he had died to perform his funeral, and render an account of it to the people.

Fraud was to be punished by a fourfold fine. Twenty sesterces each were to be allowed the delegates for travelling expenses, going and returning. If the death had taken place more than 20 miles from Lanuvium, and no notice had been sent, the person who had performed the funeral was to send a sealed certificate, attested by seven Roman citizens, on the production of which the usual sum for the expenses was granted. If a member of the college had left a will, only the heir named in it could claim anything. If he died intestate, the quinquenales, or magistrates of the municipium, and the people generally were to direct how the funeral should take place. If any member of the college in the condition of a slave should die, and his body, through the unjust conduct of his master or mistress, should not be given up for burial, his funeral should be celebrated by his bust being carried in procession. No funeral of a suicide was to take place.

There were many other rules, tending to preserve order and promote good fellowship; but these are all which relate to the burial club. This curious document affords an additional proof how much ancient life is found to resemble the modern when we gain an insight into its interior through the medium of its monuments. It is more than prob. that through the agency of "Gilds" and other fraternities the custom of Burial Clubs descended from the Romans direct to us. [GILDS.]

In Gt. Brit. in recent years considerable attention has been called to Burial Clubs from time to time, by reason of the crimes to which they are supposed to have led in causing an undue interest on the part of the relatives of members—particularly parents and guardians of children—in their death. Legislative interference has in consequence been found necessary. Thus, by the 13 & 14 Vict. c. 115 (1850), no sum is to be ins. on the death of any child under 10 beyond the sum actually incurred for funeral expenses; and these expenses were not to exceed £3 in any one case. The provisions of this Act were framed, we believe, in view of the Essex poisoning cases, which occurred shortly previous.

Under the 18 & 19 Vict. c. 65 (1855)—which consolidated the laws of friendly sos.—such a so. may be estab. by voluntary subs. of the members for ins. a sum of money to be paid on the birth of a member's child, or on the death of a member, or for the funeral expenses of a wife or child of a member. No ins. can be legally effected on the life of a person unless he or she has been admitted a member according to the rules; and the mere payments of the contributions by a stranger will not constitute the assured a member.

Every person on joining a so. should obtain a copy of the rules, and sign such declaration and pass such examination as is required. He should also have a pol. before he pays his prem., and not be content with a card. If he be not admitted a member according to the rules, the so. may refuse payment on his death.

No pol. given by a F. so. can be legally transferred or assigned; but if the amount ins. does not exceed £50, the same is to be paid to the person directed by the rules, or nominated by the deceased in writing, deposited with the Sec.—such person being the husband, wife, father, mother, child, brother or sister, nephew or niece of the deceased; and in case there shall be no such direction or nomination, or the person so nominated shall have died before the deceased, or in case the member shall have revoked such nomination, then such sum is to be paid to the person who shall appear to the trustees to be entitled, under the Statute of Distributions, to receive the same, without taking out letters of administration.

By the 21 & 22 Vict. c. 101 (1858), it was enacted that no money should be payable on the death of a child without a certificate signed by a medical practitioner stating the probable cause of death.

In an address by Mr. Edwin Chadwick, C.B., before the Social Science Asso. at Sheffield, in 1865, that gentleman said:

I had some years ago to make inquiries in relation to the operation of the lowest class of ins., and, in connexion with provisions for the destitute, those by means of sick clubs and burial sos. When I put forth in my reports a part of the evidence disclosed to me, showing that the practice of secret murders, and the neglect of children, had taken root and was spreading for the sake of the burial money, it excited much surprise, and gave much pain to many eminent benevolent persons, and amongst them, to the distinguished contributor to social science, the late Rev. John Clay, the Chaplain of the House of Correction at Preston, where burial clubs were very numerous. He closely investigated the subject, when he was constrained to admit and declare, as he repeatedly did, that the extent of the evil had

been understated. Close and sustained investigations into the sources of crime estab. the general conclusion—that, given the profit, given the opportunities or temptations, by exposures or want of precautions, for obtaining it by crime—you may confidently assume the existence of the practice of the crimes, and that it is in default of investigation if they are not detected. [FRIENDLY SOS.]

BURIAL GROUNDS.—See BURIAL ; CEMETERY ; FUNERALS.

BURIAL TAX.—By 6 & 7 Wm. III. c. 6, enacted 1695, a tax was imposed upon *burials*. Tax continued by 8 & 9 Wm. III. c. 20, s. 14 (1696–7). [MORTALITY TAX.]

BURLAMQUI [or BURLAMAQUI], M. J. J., pub. in Geneva in 1747, *Principes du Droit Naturel et Politique*, a work we have noticed in our hist. of marine ins. In 1748 an English ed., translated by Thomas Nugent, was pub., and this passed through several ed., and has since been several times reprinted in the U. S. Other eds., 1752 and 1763.

BURLS, CHARLES, JUN., Sec. of the *Mut. Provident Alliance*, from 1849 down to present time.

BURN, JOHN ILDERTON, of the Inner Temple, pub. in 1801, *A Practical Treatise or Compendium of the Law of Marine Insurances*. An ed. of this work was also pub. in New York the same year. It is referred to in other parts of these pages.

BURN, JOHN SOUTHERDEN, pub. in 1829, *Registrum Ecclesie Parochialis: The History of Parish Regis. in England; also of the Regis. of Scotland, Ireland, the East and West Indies, Foreign Countries, Dissenters, the Fleet, King's Bench, Mint, Chapel Royal, etc.; with Observations on Bishops' Transcripts, and the Provisions of the Act of 52nd George III. cap. 146.* 2nd ed., "considerably enlarged," 1862. In 1833 he pub. *The Fleet Registers, comprising the Hist. of Fleet Marriages, and some Account of the Parsons and Marriage-Housekeepers, with Extracts from the Registers; to which are added Notices of the May Fair, Mint, and Savoy Chapels; and an Appen. relating to Parochial Regis.* These works will be referred to under various heads. [DEATHS.] [MARRIAGES.] [PARISH REGIS.]

BURNAND, HENRY, was Underwriter of *Thames and Mersey* Marine from its formation in 1860, down to 1870.

BURNAND, JOHN NEWNHAM, was promoter and Man. Director of various ins. asso., of which the following may be particularly enumerated:—1846, *General Shipping Freight, etc., Ins. Co.*; 1847—*General Commission, Ship, Loan, Co.*; 1849—*London Marine Brokers*; 1852—*Home and Foreign Security*; 1853—*Australian and General Consignment*.

A tolerably complete biography of this gentleman was furnished by Mr. J. Hooper Hartnoll, in his ed. of *Ann. Balance Sheets of Ins. Cos.* 1852.

BURNAND, THEOPHILUS, was Man. of *Marine Ins. Co.* (Lond.), for many years [before 1843] down to 1871.

BURNETT, ALEX. S., Act of *Barbadoes Mut.* since 1862. Early in the year succeeding his appointment to office, Mr. Burnett made a very interesting report of his investigations into the mort. of the so., of which we have already given an account in our notice of that so. He therein announced his intention of preparing a mort. T. based upon the experience of the office. We shall look forward with much interest to see this. In vol. xv., p. 81, of *Assu. Mag.*, Mr. A. H. Bailey speaks of the "carefully compiled statistics of the *Barbadoes Mut.*" A few years since Mr. Burnett visited this country and made the personal acquaintance of some of its leading actuaries.

BURNETT, G. H., Man. in Lond. of *North British and Mercantile*. He was trained in the Lond. office of the *Northern*, which he entered in 1854. In 1862 he became Foreign Man. of the N. B. and M., in which capacity he visited most of the European countries, including Russia; also the U. S. and Canada; and it is not too much to say that to his discretion and enterprise—directed and supported by the Gen. Man.—is due the rapid progress of the office during the last ten years. On the occasion of the great conflagration at Chicago in 1871, he was specially selected to visit that city, and personally superintend the adjustment of the numerous claims upon his Co. His report upon the subject indicates special ability and sagacity. On his return he was promoted to his present position, which combines the duties of the home and foreign departments.

BURNING OF HOUSES, OUTHOUSES, CHURCHES, SHIPS, ETC.—See ARSON.

BURNLEY MUTUAL FIRE OFFICE.—An office under this title was founded in 1844 [or 1849] but it does not appear to have transacted any bus. We do not find that it ever made any return of fire duty collected.

BURNS AND SCALDS, DEATHS BY (Class, VIOLENT DEATHS; Order, *Accident or Negligence*).—The deaths from these combined causes in England, although numerous, are on the decrease. In ten consecutive years they were as follows:—1858, 3125; 1859, 2978; 1860, 3166; 1861, 3053; 1862, 2767; 1863, 2766; 1864, 2987; 1865, 2713; 1866, 2533; 1867, 2600; thus varying from 162 per million of the pop. in 1858, to 138 in 1862, and 123 in 1867.

The deaths of 1867 were—males 1379; females 1221. Of the males 749 died under 5; and 139 between 5 and 10. The others over the different periods of life, the mort. being heavy between 25 and 35. Of the females, 602 died under 5; and 222 between 5 and 10; the remaining deaths are distributed over the other ages, and are heavy at ages 75–85.

It is gratifying to observe some tendency towards a decrease of fatal casualties from these causes:

In E. and W. no less than 51,160 persons—25,345 males and 25,815 females—were burnt or scalded to

death in the 18 years 1848-65. The ann. sacrifice was 2842. It is worthy of remark that the number of girls and women burnt in 1865 was less than the average. Thus, the average ann. number in previous years was 1434; in the year 1865 the number fell to 1369; 65 lives were saved. The proportion to 100,000 pop. in each of the two periods was 14.7 and 12.7. Among children the rate of mort. in 1865 to 100,000 living was as follows: Males under 5 years, 57.0; females under 5 years, 45.1. A certain proportion of the 1473 children whose deaths were referred to burns and scalds were suffocated through drinking scalding water, the larynx in such cases being closed. At the age of 5 and under 10 years the proportional numbers were: Males, 12; females, 21; at age 10 and under 15 they were: Males, 4; females, 6; the difference in the mort. of the two sexes at these ages was due to the great inflammability of cotton dresses. Of the 14,193 males dying of burns and scalds under 5 years of age in the 18 years 1848-65, 910 were under 1 year of age; 3482 were 1 year and under 2; 3694 were 2 years and under 3; 3382 were 3 years and under 4; 2725 were 4 years and under 5. Of the 11,676 females dying under 5 years of age, 919 were less than 1 year of age; 2743 were 1 year and under 2; 2762 were 2 years and under 3; 2834 were 3 years and under 4; and 2418 were 4 years and under 5. Young children drank scalding water out of the spout of the tea-kettle, or fell into scalding water. This happened often among the lower classes, when the mother was out at work, and the children were left at home alone. It may be stated that in the year 1855, the deaths by burns and scalds (3177) were more fatal than in any other year. The cold led to an increase in the consumption of coal; people approached nearer to the fire than in ordinary years, and the cold was thus the indirect cause of raising the mort. by burns.

Dr. Farr said—24th Rep. Reg.-Gen (1863)—regarding deaths from burning :

At 65 and upwards the men are partially withdrawn from danger, but the old women's combustible dresses catch the flames in their state of feebleness, and 2122 of them were burnt to death in 14 years. The Druidical sacrifices, the fires of Moloch, the Inquisition, the fires of Smithfield, the burnings of witches in the middle ages, and the immolation of widows in India, naturally excite horror in the present age. They admit of no historical palliation. Still it is evident that the lives were offered up mistakenly, with a view to the removal of evil, and that the sacrifices were sanctioned by the religion or the superstition of the age and people. The deaths by burning in England are ascribed to accidents; but they are none the less dreadful on that account, particularly when it is considered that the victims are often as unnecessarily exposed as moths to the flames in which they perish.

BURR, THOMAS, Sec. of *Kent Mutual Fire*, and *Kent Mutual Marine*, from the time they respectively commenced bus. down to 1853.

BURR, THOMAS, JUN., Sec. of *Kent Mutual Life* from its foundation to 1851.

BURROWS, A. T., Underwriter of *Realm Marine* from close of 1871. Had been for many years previously a Deputy Underwriter of *Thames and Mersey Marine*.

BURROWS, WILLIAM BERESFORD, of Portadown, North of Ireland. He is well known to the ins. offices of Gt. Brit., having during a series of years represented numerous English Cos. How many offices he represents at this moment we cannot say. We believe he has transacted a large if not profitable bus.

BURT, ALFRED.—This gentleman, who commenced his ins. career as a clerk in the *Tontine L.*, was known at one period as a somewhat extended projector of ins. asso. He has occupied various positions in connexion with the following ins. asso.—in some of them simply as promoter:—1848, *Mining and General Mutual L.*; 1849, Sec. of *Sea Fire L.*, and Act of its L. department; 1850, joint promoter of *New Equitable*; 1851, *Industrial Sick*; 1852, Act. and Sec. *British Provident*; 1853, Sec. *Home Counties*; 1857, *the Householders*.

He pub. in 1849, *Life Assu. : An Historical and Statistical Account of the Pop., the Law of Mort., and the Different Systems of L. Assu., including the Validity and Non-Validity of L. Policies; with Observations on Friendly Sos. and Savings Banks. To which is added a Review of L. Assu., Explanatory of the Nature, Advantages, and the various purposes to which it may be applied.* The work is of a very superficial character, and a writer in the *Post-Mag.*, of 17th Nov., 1849, charged the compiler with very barefaced plagiarism.

In the same year he also pub. *Life Assu. Validity and Non-Validity of Life Pol. : Statement of Facts showing the defective system of L. Assu. as in practice by L. Offices.*

We heard tidings of Mr. Burt not many weeks since, alive and well, and anxious to assume the control of a young L. ins. interprise.

BURT, DR. J. G. M., pub. in the *Edinburgh Medical Journal*, in 1862, *A Report of the Causes of Death in the North Brit. L. Assu. Co., from the commencement up to 1860.* [EXPERIENCE TABLES.]

BURY, WILLIAM, for many years Act. and Sec. of *Hope* (No. 1.), which position he retained down to amalg. of Co. in 1844.

BUSINESS, PLACE OF.—By the Companies Act, 1862 (secs. 41 and 42), every co. regis. thereunder is required to have its name painted or affixed on the outside of every office where its business is carried on, in letters easily legible.

By the Policies of Ins. Act, 1867, every policy of ins. must specify upon it the place or places of business at which notices of assignment may be given—that is, its head or chief office.

BUSINESS, SUSPENSION OF.—If a joint-stock co., ins. or otherwise, regis. under the Cos. Acts, 1862 and 1867, suspend its operations at any time for a period of *one year*, that is a cause for the winding-up of such co.

BUSSA.—A great ship.—*Blount*.

BUTCHERS.—This useful body of men numbered in England, in 1851, 49,403, being males of 20 years and upwards; and they experienced a much heavier rate of mort. than any other class except that of innkeepers—and at ages between 55 and 65 they even exceeded the innkeepers. Their mort. to 1000 living at each of the decennial ages was in that

year as follows : Between ages 25 and 35, over 11 per 1000 living ; 35-45, over 16 per 1000 ; 45-55, 23 ; 55-65, 41 ; 65-75, 66 ; 75-85, 154 ; 85 and upwards, 369. The mort. of the whole pop. at ages 55-65 being 30 per 1000 ; that of publicans was 39, and of butchers, 41 per 1000.

The Regis.-Gen. [14th report, 1855] said hereon :

While much has been written about the diseases of shoemakers, weavers, tailors, miners, and bakers, the extraordinary mort. of butchers appears to have escaped observation. Calculation alone has taught us that the red injected face of the butcher is an indication of a frail habit of body. Here is an important problem for solution. On what does the great mort. of the butcher depend ? On his diet, into which too much animal food and too little fruit and vegetables enter ?—on his drinking to excess ?—on his exposure to heat and cold ?—or, which is probably the most powerful cause, on the elements of decaying matter by which he is surrounded in his slaughter-house and its vicinity ?

Mr. H. W. Porter, in his obs. upon the Reg.-Gen. reports (1860), appears to adopt this latter view.

In the 3rd ed. of *Contributions to Vital Statistics*, 1857, Mr. Neison says, “The class of butchers seems to experience a very high rate of mort., although not subject to above the average amount of sickness” This was indeed only confirmatory of the investigations of Mr. Ratcliffe, pub. 1850. But both Mr. Ratcliffe’s and Mr. Neison’s obs. were limited to the experience of friendly sos. where local selection had been exercised.

In 1861 the number of butchers was found to be 63,278—the increase appears to have arisen partly from beginning at age 15 instead of 20, as in the 1851 census. Of the total number there were between the ages 15-25, 19,349 ; between 25-35, 14,861 ; between 35-45, 11,552 ; between 45-55, 8423 ; between 55-65, 5557 ; between 65-75, 2661 ; between 75-85, 792 ; 85 and upwards, 83. At age 45 and upwards the mort. of butchers in 1860-1 was greater than that of any other class except innkeepers, thus :

Annual mortality per cent. in the years 1860-61 :

	Age 45.	Age 55.	Age 65.	Age 75.	Age 85 and upwards.
Farmers...	1'244	2'307	5'750	14'548	33'776.
All England...	1'767	3'110	6'625	14'832	31'702.
Butchers	2'090	3'779	8'025	16'856	36'747.
Publicans	2'810	4'104	7'242	20'334	11'744.

[*Vide* Supp. to the 25th Rep. of Reg.-Gen., 1864.]

In 1864 the Gov. ins. scheme was set on foot, and among the excepted classes—to be ins. at special rates only—were butchers. In 1865 Mr. Adler, in a paper on the Gov. scheme, read before the Inst. of Act. [ADLER], dwelt upon the fact of the butchers being excluded, appearing to rely very much upon the results of Mr. Ratcliffe and Mr. Neison ; and not having obs. that the results given in the Supp. to 25th R. of Reg.-Gen., quoted above, fully confirmed those of the 14th Rep., Mr. Adler considered the mort. of butchers favourable in comparison with that of other trades, adding :

This view is confirmed in various reports of Dr. Letheby on the sanitary condition of the city of Lond. Without stopping to pursue this inquiry further, I will only add that Dr. Thomson, Dr. Ward, and the author of an article in the *Quarterly Review* for Jan. 1860, seem also to dissent in some measure from the view propounded in the 14th Reg.-Gen. Rep.

The subject is worthy of further investigation ; in the mean time the ins. offices will be wise to act on the side of caution. A very useful little art. upon this subject appeared in the *Ins. Agent* in June, 1868.

BUTHSCARLE.—Mariners or Seamen.—*Selden*.

BUTLER, EDWARD, Sec. of *Reliance* since 1858. Mr. Butler was the founder of the *East of England L.*, which became amalg. with the *Reliance* at the date named.

BY-LAWS.—A good deal of learning has been bestowed on the endeavour to trace the derivation of this term. “Laws made *obiter*, by the *by*,” is Wharton’s definition, and is perhaps the most rational. They are laws and regulations of asso. made for the government of their members—being private laws, reaching particular cases not provided for in the orig. constitution of the asso., and not reached by the general laws of the land. They are binding, unless contrary to law, or unreasonable, and against the common benefit. If any of these, they are void. It is an inherent right of every so. to make such regulations, subject to the limitations stated.

No trading co. is allowed to make by-laws which may affect the Crown, or the common profit of the people.

BYLES, JOHN BARNARD, pub. in 1845, *Observations on the Usury Laws, and on the Effect of Recent Alterations ; with Suggestions for the Permanent Amendment of the Law, and the Draft of an Act for that purpose*.

BYNKERSHOECK, VAN, President of the Supreme Court of Holland, and a great authority on questions of International Law. He pub. the following, bearing more or less directly upon ins. topics. In 1737, at Leyden, *Questiones juris publici* ; and *Questiones juris privati*. In 1767, *De Lege Rhodia di Factu*. The works are composed with an amount of learning, perspicuity, and precision, which has rarely been surpassed, and which has made them standard on the subjects of which they treat. An English trans. of some portions of the above was pub. by Richard Lee in 1759 ; and again by another hand in Philadelphia in 1810.

C

CABLE.—The great rope of a ship to which the anchor is fastened. Iron chain cables are said to have been used by the Veneti in the time of Cæsar, or 57 years before the Christian era. These latter were only introduced into the English Navy in 1812. In 1785 a special Act of Parl. was passed—25 Geo. III. c. 56—to prevent deceits and frauds in the manufacture of cables and cordage for ships. In 1864 an Act was passed—27 & 28 Vict. c. 27—authorizing the testing of cables and anchors.

CADAVER (from *Cado*, to fall).—A corpse or dead body. Hence the term *Cadaverous*, expressive of great exhaustion.

CADDOW, JOHN, Underwriter of *Maritime Marine* Ins. Co., Liverpool, since 1868.

CADIZ.—A maritime port in Spain [anciently Gadiz—the Roman *Gades*].—It was at a former period a place of considerable commercial and maritime importance. One hundred vessels of the Spanish Armada were destroyed in its port, 1587, by Sir Francis Drake. The Consulado of Cadiz was only estab. in 1680; but it had long previously been possessed of regulations for governing its ins. contracts. The following is a form of marine pol. in use in 1618:

In the name of God, Amen. We, the underwritten, do acknowledge and oblige ourselves to insure you, *A. B.*, or any goods loaded by you, or by any other person or persons for you: And we also insure you on all the charge or charges of this ins.: The which said merchandize go registered in the Royal Register, and at the risk of *A. B.*, in the ship *N.*, Captain *C. D.*, or any other who shall go master in her. And the said ship being loaded, let her prosecute her present voyage successfully unto her destined port in the Indies, and there arrived in safety, and the goods unloaded from the said ship, in any boat or boats, until delivered safe ashore. And it is agreed that the said ship may, and do, make what stops she will, or may judge proper, as well unavoidable as voluntary, entering into and going out of any port or ports, delivering or receiving any goods, though not altering the voyage, except to join some company: And if any risk or damage happens, we declare, that on producing a certificate of it, made with or without the party, or by a person that shall not have been made a party in the place where the ship shall have been lost, or in any other port: and after 6 months are past, to be counted from the day that the policy was signed, we will freely pay, and immediately disburse and deposit in the power of the shipper, or the person insured, all that we shall have underwrote, or that part of the damage which shall touch us on giving us sufficient and satisfactory security to return us 33 p.c. if such payment shall be wrong made, and the ship should not appear: that is we are to pay in a year and a half from the ship's sailing out of port, and not appearing in that time: and the year and a half is to be counted from the ship's departure from the port, and not from the time the policy was signed. And it is to be understood that the first and last of us are proportionably to run the risk of what the lading shall be worth, and the surplus of the cargo's value must be left out, according to the Ordinance. And in this manner, and with these conditions, we are content to run the said risk. And for a compliance we oblige our persons and effects: and give full power to the Justice of the *Contratacion House* of this City of Seville, and to any other Justices of these Kingdoms, to oblige us to comply: and we renounce our own proper rights and privileges, and the Law *Si convenerit*, and submit ourselves to the customs and jurisdiction of the said Judges, Officers, and all the other Justices, and to the Prior and Consuls, which are or henceforward shall be of the University of the Shippers and Merchants trading to the Indies, of the City of Seville: that by all rigour of Law, as well by way of execution, as in any other manner, they compel and force us to observe and perform them, as if it was anything judged and determined by a definitive sentence pronounced by a competent judge in a contradictory judgment, and consented to by us, and each of us, and passed as a determined thing.

Magens gives a form of pol. in use in 1725, in which the penalty of 33 p.c. is altogether omitted. The subs. of the underwriter at the last-named date was in the following form:

I am content to run the risk in the said ship, which God preserve and keep, in conformity to this pol. for 100 Dollons of two Escudos of gold each, and am paid the prem. in ready money, at the rate of . . . p.c. Dated at Cadiz, this of 1725.

He also gives a form of bottomry bond on ships, and another form on goods.

CADOGAN, CHARLES, was Sec. of *General Live Stock* from 1854 down to the date of its liq.

CÆSARIAN OPERATION, OR SECTION (*Hysterotomia*).—A surgical operation whereby the *fœtus*, which can neither make its way into the world by the ordinary or natural passage, nor be extracted by the application of art—whether the mother and *fœtus* be yet alive, or whether one of them be dead—is released by an incision in the abdomen and through the *uterus*, with a view to save the lives of both or either.

By most men the life of the mother has been considered of the greatest importance, and therefore, as the Cæsarion operation is full of danger to her, no Brit. practitioner will perform it when delivery can, by destruction of the child, be procured *per vias naturales*. There are, I think, histories of 23 cases where this operation has been performed in Brit.; out of these only one woman has been saved, but 11 children have been preserved. On the Continent, however, where the operation has been performed more frequently, and often in more favourable circumstances, the number [proportion?] of fatal cases is much less. The operation itself, though dangerous in its consequences and formidable in its appearance, is by no means difficult to perform.—Burn, *Principles of Midwifery*.

Cooper's *Surgical Dict.* (ed. 1861) contains a T. which, out of 2009 cases, gives a mort. of 55.4 p.c. of the mothers, and 29.45 p.c. of the children. The deaths in England from this cause were—in 1865, 4; 1866, 3; 1867, 4.

CAINES, GEORGE, pub. in New York, in 1802, *Lex Mercatoria Americana; or, An Inquiry into the Law Merchant of the United States on several Heads of Commercial Importance*.

The work treats incidentally of marine ins., but is not regarded as of much authority.

CALCAGUI, DR. FRANCISCO.—In 1822 he compiled *A Bill of Mort. for the City of Palermo*, which was pub. in 1823. [BILLS OF MORT.]

CALCULATING MACHINES.—Ever since men began to compute, endeavours have been made to facilitate calculations, or to perform them altogether, by means of mechanical

contrivances. The history of these would afford its author abundant and interesting materials. The hands and fingers offer the first and readiest help in computing. We can not only count on the fingers, but even perform complicated calculations.—*Dr. Zillmer*.

The idea of calculation by mechanism is not new. Arithmetical instruments, such as the calculating boards of the ancients, on which they made their computations by the aid of counters; the *Abacus*, an instrument for computing by the aid of balls sliding upon parallel rods; the method of calculation invented by Baron Napier, called by him *Rhabdology*, and since called "Napier's Bones"; the Shwan-Pan of the Chinese; and other similar contrivances,—among which more particularly may be mentioned the Sliding Rule, of so much use in practical calculations to modern engineers,—will occur to every reader. These may more properly be called *Arithmetical Instruments*,—partaking more or less of a mechanical character.—*Dr. Lardner*, in *Edin. Review*, July, 1834.

Calculating machines comprise various pieces of mechanism for assisting the human mind in executing the operations of arithmetic. Some few of these perform the whole operation without any mental attention, when once the given numbers have been put into the machine. Others require a moderate portion of mental attention: these latter are generally of much simpler construction than the former, and, it may also be added, are less useful. The simplest way of deciding to which of these two classes any calculating machine belongs is, ask its maker—Whether, when the numbers on which it is to operate are placed in the instrument, it is capable of arriving at its result by the mere motion of a spring, a descending weight, or any other constant force? If the answer be in the affirmative, the machine is really automatic; if otherwise, it is not self-acting. Of the various machines I have had occasion to examine, many of those for addition and subtraction have been found to be automatic. Of machines for multiplication and division, which have come under my examination, I cannot at present recall one to my memory as absolutely fulfilling this condition.—*Babbage's Passages from the Life of a Philosopher*, 1864.

We propose here mainly to confine our attention to CALCULATING MACHINES, but we must also take a passing note of ARITHMETICAL INSTRUMENTS.

Unquestionably the most ancient Arithmetical Instrument is the *Abacus*. It is simply an oblong frame, divided by a certain number of wires placed upright or across, upon which wires small ivory balls or beads are strung. Commencing from the bottom wire each above it has a progressive ten-fold value. By this simple contrivance very extensive operations may be computed, with great rapidity. This instrument has been used successively by the Greeks, Romans [*Tabula Logistica*], Russians, Germans, French, etc.—indeed by most of the Eastern nations.

The Chinese *Shwan-Pan* is but a variation of the *Abacus*. Whether it ranks before the European invention in point of date, we cannot determine. In point of power, by means of a simple subdivision, it is greatly in advance of all European varieties. Sir John Bowring, after a long official residence in China, speaks in the most unqualified terms of its use, and of the marvellous accuracy with which calculations are performed by its aid.

The first recorded attempt at an Arithmetical Instrument in Gt. Brit. is that made by Napier, the inventor of Logarithms, about 1614. As already stated, the instrument is known as "Napier's Bones." It is simply a movable multiplication T. The multiplicand is written on the top of a rod or other movable slip, its multiples in lines below—the units being separated from the tens by diagonal lines; and these slips are sufficiently numerous to allow of the formation of any number by their initial figures. If the multiplicand be, for example, 43429448, slips are arranged showing that number at the top, and then in any of the horizontal lines its multiple may be had by carrying the tens on one slip to the units of that on its right. In this way the computer obtains the successive lines of his product: these he has to write down and add together in the usual way. Mr. Edward Sang, writing of this contrivance as recently as 1871, says: "I am not acquainted with any other contrivance for showing the product of two numerical factors." Again: "It must not, however, be thought that Napier's rods [Mr. Sang always calls him Napier, for which there is authority] were of no use: in his day men learned to count after they were grown old; and Indian numerals were novelties, and the multiplication table was by no means at the finger-ends of computers; thus the rods were of real use," etc.

The first Calculating Machine of which we find any mention is one invented by that eminent philosopher PASCAL, about 1650. He, being then about 19 years of age, and engaged with his father, who held an official position in Upper Normandy, the duties of which required frequent numerical calculations, contrived a piece of mechanism to facilitate the performance of them. This mechanism consisted of a series of wheels, carrying cylindrical barrels, on which were engraved the ten arithmetical characters. The wheel which expressed each order of units was so connected with the wheel which expressed the superior order, that when the former passed from 9 to 0, the latter was necessarily advanced one figure: and thus the process of carrying was executed by mechanism. When one number was to be added to another by this machine, the addition of each figure to the other was performed by the hand; when it was required to add more than two numbers, the additions were performed in the same manner successively; the second was added to the first, the third to their sum, and so on. Subtraction was reduced to addition

by the method of arithmetical complements ; multiplication was performed by a succession of additions ; and division by a succession of subtractions. In all cases, however, the operations were executed from wheel to wheel by the hand.

It is very doubtful if this machine was ever brought into any practical use. Dr. Lardner estimates its value as follows : " It was capable of performing only particular arithmetical operations, and these subject to all the chances of error in manipulation : attended also with little more expedition (if so much) as would be attained by the pen of an expert computer."

This attempt of Pascal was followed by various others, with very little improvement, and with no additional success. POLENUS, a learned and ingenious Italian, invented a machine by which multiplication was performed, but which does not appear to have afforded any material facilities, nor any more security against error than the common process of the pen.

In 1663 SIR SAMUEL MORELAND constructed a very complete and well-executed machine for answering all questions in plain trigonometry. In 1666 he constructed a small calculating machine of the simplest order for adding together any number of separate sums of money, providing the total was under £100,000. It would appear that all Moreland really did, was to transfer to wheel-work the figures of Napier's bones ; and to have made some additions to the machine of Pascal.

M. GRILLET, a French mechanician, made a like attempt, prob. about this date, but with no great success.

About 1672, LEIBNITZ, the great mathematician and philosopher, invented a calculating machine. We have never seen any description of it. One of the Bernouillis applied to him to describe it ; but his account of it was most meagre. He says, however, that the process of division was performed independently of a succession of subtractions, such as that used by Pascal. There is reason to believe that the machine was one of an extremely complicated nature ; attended with considerable expense of construction ; and only fit to be used in cases where numerous and expensive calculations were necessary. The inventor stated that he had caused two models to be made of his machine ; but we cannot find that it was ever applied to any useful purpose. Hutton says that both the great French minister, Colbert, and the Academy of Sciences, approved of Leibnitz's invention.

Early in the 18th century an arithmetical instrument was invented by DR. NICHOLAS SAUNDERSON, Professor of Mathematics in Cambridge University. The peculiar circumstance attending this invention was, that the learned Doctor was entirely blind—rendered so by an attack of smallpox in his childhood ; and this contrivance was designed by himself to aid him in his peculiar difficulties ; and by its aid he constantly performed very intricate calculations with great rapidity. His "Calculating Table" was a smooth thin board, a little more than a foot square, raised upon a small frame, so as to lie hollow ; which board was divided into a great number of little squares, by lines intersecting one another perpendicularly, and parallel to the sides of the T.—the parallel ones only one-tenth of an inch from each other ; so that every square inch of the T. was thus divided into 100 little squares. At every point of intersection the board was perforated by small holes, capable of receiving a pin ; for it was by the help of pins, stuck up to the head through these holes, that he expressed his numbers. He used two sorts of pins ; a larger and a smaller sort ; at least their heads were different, and might easily be distinguished by feeling. Of these pins he had a large quantity in two boxes, with their points cut off, which always stood ready before him when he calculated. A writer who was familiar with his process says : " He could place and displace his pins with incredible nimbleness and facility, much to the pleasure and surprise of all the beholders. He could even break off in the middle of a calculation, and resume it when he pleased : and could presently know the condition of it, by only drawing his fingers gently over the Table."—*Hutton's Math. Dict.*

About this period also M. DELEPRENE and M. BOITISSENDEAU invented several mechanical contrivances for performing particular arithmetical processes. These were, however, merely modifications of Pascal's, "without varying or extending its objects."

About the middle of the same [18th] century, VISCOUNT MAHON [afterwards Earl Stanhope] invented a small arithmetical machine. In 1775 the same noble inventor made a larger machine, to add, subtract, multiply, and divide. In 1777 he produced another somewhat similar machine, of a somewhat different construction, for the same operations.

In vol. i. of *Machines et Inventions approuvées par l'Académie Royal des Sciences* there is a description of the *Abacus Rhabdologicus*, a variation of Napier's. In vol. xlv. of *Phil. Trans.* there is an account of an ingenious instrument of computation invented by MR. GAMALIEL SOMETHWEST, where the inventor remarks that computations by it are much quicker and easier than by the pen ; are less burdensome to the memory ; and can be performed by blind persons, or in the dark as well as in the light.

Before passing from these earlier machines to a more modern phase of invention, we may with advantage again quote Dr. Lardner :

Even had the mechanism of these machines performed all which their inventors expected from them, they would have been still altogether inapplicable for the purposes to which it is proposed that the calculating machinery of Mr. Babbage shall be applied. They were all constructed with a view to perform *particular arithmetical operations*, and in all of them the accuracy of the result depended more or less upon manipulation.

PROF. BABBAGE, the next inventor whom we have to mention, being thus introduced to us, we may at once proceed to speak of his performances. It seems to have occurred to him as early as 1812 or 1813, that T. of logarithms might be calculated by machinery. We propose to draw from his own record—*Passages from the Life of a Philosopher*—such details as may best expound his efforts, and at the same time aid in a general understanding of this interesting subject :

I considered that a machine to execute the more isolated operations of arithmetic would be comparatively of little value unless it were very easily set to do its work, and unless it executed not only accurately, but with great rapidity, whatever it was required to do. On the other hand, the method of *differences* supplied a general principle by which *all* tables might be computed through limited intervals by one uniform process. Again, the method of differences required the use of mechanism for addition only. In order, however, to insure accuracy in the printed T., it was necessary that the machine which computed T. should also set them up in type, or else supply a mould in which stereotype plates of those T. could be cast.

I now began to sketch out arrangements for accomplishing the several partial processes which were required. The arithmetical part must consist of two distinct processes—the power of adding one digit to another, and also of carrying the tens to the next digit, if it should be necessary. The first idea was, naturally, to add each digit successively. This, however, would occupy much time if the numbers added together consisted of many places of figures. The next step was to add all the digits of the two numbers, each at the same instant, but reserving a certain mechanical memorandum whenever a carriage became due. These carriages were then to be executed successively. Having made various drawings, I now began to make models of some portions of the machine, to see how they would act. Each number was to be expressed upon wheels placed upon an axis; there being one wheel for each figure in the number operated upon.

He then tells us how his first experiments failed ; and the cause of the failure. He proceeds :

The next step was to devise means for printing the T. to be computed by this machine. My first plan was to put together movable type. I proposed to make metal boxes, each containing 3000 types of one of the ten digits. These types were to be made to pass out one by one from the bottom of their boxes, when required, by the computing part of the machine. But here a new difficulty arose. The attendant who put the types into the boxes might, by mistake, put a wrong type in one or more of them. This cause of error I removed in the following manner :—There are usually certain notches in the side of the type. I caused these notches to be so placed that all the types of any given digit possessed the same characteristic notches, which no other type had. Thus, when the boxes were filled, by passing a small wire down these peculiar notches, it would be impeded in its passage, if there were included in the row a single wrong figure. Also if any digit were turned upside down, it would be indicated by the stoppage of the testing wire. One notch was reserved as common to every species of type. . . .

By means of this common notch, precautions were taken to prevent disaster after the type was finally set :

Another plan for printing the T. was to place the ordinary printing type round the edges of wheels. Then as each successive number was produced by the arithmetical part, the type-wheels would move down upon a plate of soft composition, upon which the tabular number would be impressed. This mould was formed of a mixture of plaster of Paris, with other materials, so as to become hard in the course of a few hours. The first difficulty arose from the impression of one tabular number on the mould being distorted by the succeeding one. I was not then aware of the very slight depth of impression from the type would be quite sufficient. . . .

Another series of experiments were, however, made for the purpose of punching the computed numbers upon copper plate. A special machine was contrived and constructed, which might be called a co-ordinate machine, because it moved the copper plate and steel punches in the direction of three rectangular co-ordinates. This machine was afterwards found very useful for many other purposes. . . .

In the end Mr. Babbage prepared various sketches, prob. answering each of the ends here described. Between the years 1820 and 1822 he actually constructed a DIFFERENCE ENGINE—the first which had ever been constructed. This, for the sake of distinction, we shall call Difference Engine No. 1.

About 1815 DR. ROGET invented a sliding scale of involution, known by his name. The instrument consists of one fixed and one movable scale, like a sliding rule. On the slide a line is logometrically divided, the divisions of one half being from 1 to 10, and repeated on the second half in the same order. The fixed scale is graduated in such a manner that each of its own divisions is set against its own respective logarithm on the slider ; and consequently, all the numbers on the slider will be situated immediately under those numbers in the fixed scale of which they are the logarithms. Thus 3 on the fixed scale will stand under 100, and so on. The instrument is adapted to perform the operations of involution and evolution. [See 1851.]

In 1822 the following pub. appeared :—(1) *Note respecting the Application of Machinery to the Calculation of Mathematical Tables*. This appeared in the Memoirs of the Astronomical So. (2) *A Letter to Sir H. Davy, P.R.S., on the Application of Machinery to the purpose of Calculating and Printing Mathematical Tables*. (3) *On the Theoretical Principles of the Machinery for Calculating Tables*. This appeared in Brewster's Edin. Journ. of Science. Each of the above papers were from the pen of Charles Babbage. (4) *Address to the Astronomical So. by Henry Thomas Colebrooke, Esq., F.R.S., President, on Presenting the first Gold Medal of the So. to Charles Babbage, Esq., for the Invention of the Calculating Engine*.

In the above letter to Sir Humphry Davy, Mr. Babbage said his machine would "calculate tables governed by laws which have not been hitherto shown to be explicitly determinable, or solve equations for which analytical methods of solution have not yet been contrived." He further said that the machine would take from the several boxes containing type the numbers which it calculated and place them side by side: thus

becoming at the same time a substitute for the compositor and the computer, by which means all error in copying as well as printing is removed.

In his address to the Astronomical So. Mr. Colebrooke said :

The principle which essentially distinguishes Mr. Babbage's invention from all these [the inventions which had preceded him] is, that it proposes to calculate a series of numbers following any law by the aid of differences ; and that by setting a few figures at the outset, a long series of numbers is readily produced by a mechanical operation. The method of differences in a very wide sense is the mathematical principle of the contrivance. A machine to add a number of arbitrary figures together is no economy of time or trouble ; since each individual figure must be placed in the machine ; but it is otherwise when those figures follow some law. The insertion of a few at first determines the magnitude of the next, and those of the succeeding. It is this constant repetition of similar operations which renders the computation of tables a fit subject for the application of machinery. Mr. Babbage's invention puts an engine in the place of the computer ; the question is set to the instrument, or the instrument is set to the question ; and by simply giving it motion the solution is wrought, and a string of answers is exhibited.

Regarding the printing its own Tables Mr. Colebrooke says :

The usefulness of the instrument is thus more than doubled ; for it not only saves time and trouble in transcribing results into a tabular form, and setting types for the printing of the table, but it likewise accomplishes the yet more important object of insuring accuracy, obviating numerous sources of error through the careless hands of transcribers and compositors.

No sooner was the Difference Engine No. 1 completed, than Mr. Babbage received instructions to construct another and more comprehensive one, for and at the expense of the the English Gov. This [Difference Engine No. 2] he commenced in 1823. It was proposed that this new engine should have six orders of differences, each consisting of about 20 places of figures ; and also that it should *print* the tables it computed. The printing might be by either of the processes already described. While the construction of this second machine is in hand we must proceed with our chronicle. [See 1836.]

In 1824 there appeared in the Memoirs of the Astronomical So. a paper by Charles Babbage, *Observations on the Application of Machinery to the Computations of Mathematical Tables*.

In 1829 there was pub. a *Report by the Committee appointed by the Council of the Royal So. to consider the subject referred in a Communication received by them from the Treasury, respecting Mr. Babbage's Calculating Engine, and to Report thereupon*. This Committee, which had been appointed at the instance of the Gov., consisted of Mr. Davies Gilbert, then President ; the Secretaries ; Sir John Herschel ; Mr. Francis Baily ; Mr. Brunel, Engineer ; Mr. Donkin, Engineer ; Mr. G. Rennie, Engineer ; Mr. Barton, Comptroller of the Mint ; and Mr. Warburton, M.P. The voluminous drawings, the various tools, and the portion of the machinery then executed, underwent a close and elaborate examination by this Committee. We can only give an abstract of the report :

They had declined the consideration of the principle on which the practicability of the machinery depended, and of the public utility of the object which it proposed to attain ; *because they considered the former fully admitted, and the latter obvious to all who considered the immense advantage of accurate numerical tables in all matters of calculation*—especially those which related to astronomy and navigation, and the great variety and extent of those which it is professedly the object of the machinery to calculate and print with perfect accuracy ; that absolute accuracy being one of the prominent pretensions of the undertaking, they had directed their attention especially to this point, by careful examination of the drawings, and of the work already executed, and by repeated conferences with Mr. Babbage on the subject ; that the result of their inquiry was, that such precautions appear to have been taken in every part of the contrivance, and so fully aware was the inventor of every circumstance which might by possibility produce error, that they had no hesitation in stating their belief that these precautions were effectual, and whatever the machine would do it would do truly.

They further stated that the progress which Mr. Babbage had then made, considering the very great difficulties to be overcome in an undertaking of so novel a kind, fully equalled any expectations that could reasonably have been formed ; and that although several years had elapsed since the commencement of the undertaking, yet, when the necessity of constructing plans, sections, elevations, and working drawings of every part ; of constructing, and in many cases of inventing, tools and machinery of great expense and complexity, necessary to form with the requisite precision parts of the apparatus differing from any which had previously been introduced in ordinary mechanical works ; of making many trials to ascertain the value of each proposed contrivance ; of altering, improving, and simplifying the drawings ;—that considering all these matters, the Committee, instead of feeling surprised at the time which the work had occupied, felt more disposed to wonder at the possibility of accomplishing so much.

The Committee expressed their confident opinion of the adequacy of the machinery to work under all the friction and strain to which it could be exposed ; of its durability, strength, solidity, and equilibrium ; of the prevention of, or compensation for, wear by friction ; of the accuracy of the various adjustments ; and of the judgment and discretion displayed by the inventor in his determination to admit into the mechanism nothing but the very best and most finished workmanship ; as a contrary course would have been false economy, and might have led to the loss of the whole capital expended on it.

Finally, considering all that had come before them, and relying on the talent and skill displayed by Mr. Babbage, as a mechanist, in the progress of this arduous undertaking, not less for what remained, than on the matured and digested plan and admirable execution of what was completed, the Committee did not hesitate to express their opinion, that in the then state of the engine, they regarded it as likely to fulfil the expectations entertained of it by its inventor.

It would be difficult to imagine a much stronger expression of opinion, and this too by men thoroughly competent to form a practical judgment. The work continued to progress, but in a very slow and interrupted manner, until 1833, when it became entirely relinquished.

In the *Edin. Review*, for July, 1834, appeared an art. by Dr. Lardner, mainly consisting of a description of the scientific appliances combined in the construction of Mr.

Babbage's "Calculating Engine"; but giving much information on many collateral subjects. From this we have already had occasion to quote. The following passage deserves a place here :

There are nevertheless many persons who, admitting the great ingenuity of the contrivance, have, notwithstanding, been accustomed to regard it more in the light of a philosophical curiosity, than an instrument for purposes practically useful. This mistake—than which it is not possible to imagine a greater—has arisen mainly from the ignorance which prevails of the extensive utility of those numerical tables which it is the purpose of the engine in question to produce. There are also some persons, who, not considering the time requisite to bring any invention of this magnitude to perfection in all its details, incline to consider the delays which have taken place in its progress as presumptions against its practicability. These persons should, however, before they arrive at such a conclusion, reflect upon the time which was necessary to bring to perfection engines infinitely inferior in complexity and mechanical difficulty. Let them remember that—not to mention the *invention* of that machine—the improvements alone introduced into the steam-engine by the celebrated Watt occupied a period of not less than 20 years of the life of that distinguished person, and involved an expenditure of capital amounting to £50,000. The calculating machine is a contrivance even new in its details. Its inventor did not take it up already imperfectly formed, after having received the contributions of human ingenuity exercised upon it for a century or more. It has not, like almost all other great mechanical inventions, been gradually advanced to its present state through a series of failures, through difficulties encountered and overcome by a succession of projectors. It is not an object on which the light of various minds has thus been shed. It is, on the contrary, the production of solitary and individual thought—begun, advanced through each successive stage of improvement, and brought to perfection by one mind. Yet this creation of genius, from its first rude conception to its present state, has cost little more than half the time and not one-third of the expense consumed in bringing the steam-engine—previously far advanced in the course of improvement—to that state of comparative perfection in which it was left by Watt. Short as the period of time has been which the inventor has devoted to this enterprise, it has, nevertheless, been demonstrated, to the satisfaction of many scientific men of the first eminence, that the design in all its details, reduced, as it is, to a system of mechanical drawings, is complete; and requires only to be constructed in conformity with those plans to realize all that its inventor has promised.

This was high testimony in favour of the new and more comprehensive machine upon which the inventor was then engaged. But an equally high testimony to the ability of the writer of that art. has to be recorded, in the fact that two separate inventors actually constructed calculating machines from merely reading the descriptions given by Dr. Lardner therein of Mr. Babbage's appliances.

The first of these constructions was by MR. DEACON, of Beaufort House, Strand, a well-known mechanist, who, simply for his own satisfaction, constructed a small model of the calculating part of such a machine, which however was only shown to a few friends, and never made generally known. The other was the Swedish, of which we shall speak in due order.

The reader will have surmised, from the nature of the report by the Royal So., as also from Dr. Lardner's art., that some difficulties had originated regarding the progress of Mr. Babbage's Difference Engine No. 2. This was so. By 1834 the sum of £17,000 or more had been expended, and yet the machine was very far from complete. Mr. Babbage wavered regarding the completion. The Gov. began to waver on the subject of the expense—the limit of which appeared undefined. Several years' correspondence ensued. The reason for all this is now rendered clear. Mr. Babbage was doubtful "whether the discoveries which he was then advancing might not ultimately supersede the work already executed." [*Passages, etc.*, p. 88.] Mr. Babbage had in fact conceived the idea of his *Analytical Engine*, of which we shall presently have to speak. In a letter to the Chancellor of the Exchequer, under date 20th Jan., 1836, he speaks of his new conception thus :

It is not only capable of accomplishing all those other complicated calculations which I had intended, but it also performs all calculations which were peculiar to the Difference Engine, both in less time, and to a greater extent; *in fact it completely supersedes the Difference Engine.*

We must now leave Mr. Babbage some few years to determine upon his future course of action in regard to the prosecution of his rival conceptions. [See 1848.]

In 1840 there was pub., in Paris, *General Plan, No. 25, of Mr. Babbage's Great Calculating or Analytical Engine.*

In 1842 there appeared in the *Bibliothèque Universelle de Genève*, General Menabrea's *Sketch of the Analytical Engine invented by Charles Babbage*. This was afterwards translated by the late Countess Lovelace [Lord Byron's daughter—"Ada, fair daughter of my home and heart"], with extensive notes by the translator.

We have next to speak of the second machine brought into existence by the practical descriptions of the Edinburgh Reviewer. It was constructed by HERR GEORGE SCHEUTZ, at that time the editor of a technological journal at Stockholm, and a practical printer. After reading the article in question, and satisfying himself of the practicability of construction, he laid the matter on one side to wait for an opportunity. Three years later, or in 1837, his son, HERR EDWARD SCHEUTZ, then a student at the Royal Technological Institute at Stockholm, undertook the construction of the machine, his father giving him the use of work-room, lathe and tools, with such other appliances as severe economy enabled him to procure. An application was made to the Gov. for assistance, and refused. By 1840, after many trials and modifications, a model was so far completed as to be able to calculate correctly "series with terms of 5 figures and one difference also of 5 figures." By April, 1842, its power was extended to "calculate similar series, with 2 or 3

orders of differences." In 1843, the machine, with the printing apparatus, was ready for inspection by the Royal Swedish Academy of Sciences, and after various trials a certificate was signed by several of the leading members of that body, under date 18th September, 1843, and containing the following :

The apparatus in question is composed of 3 parts. 1. *The Calculating Machine*. It cannot compute series of a higher degree than the third, nor does it give complete terms exceeding 5 figures ; but in the nature of the mechanism there is nothing to prevent its extension to the working of series of any degree whatever, and to terms of as many figures as the purpose may require. 2. *The Printing Machine*. Every term given by the calculating apparatus is expressed by printed figures closely arranged in lines, as in a printed table, the lines being impressed on some softer material adapted to receive galvanoplastic or stereotyped copies. All the lines succeed each other very correctly in the same vertical column. 3. *The Numbering Machine*. With the printing machine another apparatus is combined, which prints the arguments before every term. The machine is put in motion by turning the handle of a winch, by means of which, and without further manipulations, the calculations as well as the printing and arranging of figures and lines are effected.

The inventors, furnished with this certificate, sought orders in various countries, but without success ; and the machine remained shut up in its case for the ensuing 7 years.—[See 1853 and 1854.]

In 1843 was pub. by Mr. Babbage—*Statement of the Circumstances respecting Mr. Babbage's Calculating Engines*.

By 1848 MR. BABBAGE had completely mastered the details of his Analytical Engine—that is, had reduced them to diagrams, or working drawings, capable of being understood and executed by skilled workmen. The scope and capabilities of this new machine we propose briefly to notice, and in doing this we shall not depart from the language of its inventor :

The circular arrangement of the axes of the Difference Engine round large central wheels led to the most extended prospects. The whole of arithmetic now appeared within the grasp of mechanism. . . . The most important part of the Analytical Engine was undoubtedly the mechanical method of carrying the tens. On this I laboured incessantly, each succeeding improvement advancing me a step or two. The difficulty did not consist so much in the more or less complexity of the contrivance as in the reduction of the *time* required to effect the carriage. Twenty or thirty different plans or modifications had been drawn. At last I came to the conclusion that I had exhausted the principle of successive carriage. I concluded that nothing but teaching the Engine to foresee, and then to act upon this foresight, could ever lead me to the object I desired, namely, to make the whole of any unlimited number of carriages in one unit of time. . . .

Yet he did accomplish even this.

This new and rapid system of carrying the tens when two numbers are added together reduces the actual time of the addition of any number of digits, however large, to nine units of time for the add., and one unit for the carriage. Thus, in ten units of time, any two numbers, however large, might be added together. A few more units of time, perhaps 5 or 6, were required for making the requisite previous arrangements. Having thus advanced as nearly as seemed possible to the minimum of time requisite for arithmetical operations, I felt renewed power and increased energy to pursue the far higher object I had in view.

To describe the successive improvements of the Analytical Engine would require many vols. . . . To those who are acquainted with the principles of the Jacquard loom, and who are also familiar with analytical formulæ, a general idea of the means by which the Engine executes its operations may be obtained without much difficulty. . . . It is known as a fact that the Jacquard loom is capable of weaving any design which the imagination of man may conceive. It is also the constant practice for skilled artists to be employed by manufacturers in designing patterns. These patterns are then sent to a peculiar artist, who, by means of a certain machine, punches holes in a set of pasteboard cards in a manner that when those cards are placed in a Jacquard loom, it will then weave upon its produce the pattern designed by the artist. . . .

The analogy of the Analytical Engine with this well-known process is nearly perfect. The A. E. consists of two parts: 1. The store in which all the variables to be operated upon, as well as all those quantities which have arisen from the result of other operations, are placed. 2. The mill into which the quantities about to be operated upon are always brought. Every formula which the Analytical Engine can be required to compute consists of certain algebraical operations to be performed upon given letters, and of certain other modifications depending on the numerical value assigned to those letters. There are therefore two sets of cards: the first, to direct the nature of the operations to be performed—these are called *operation cards*; the other, to direct the particular variables on which those cards are required to operate—these latter are called *variable cards*. Now the symbol of each variable or constant is placed at the top of a column capable of containing any required number of digits.

Under this arrangement, when any formula is required to be computed, a set of operation cards must be strung together, which contain the series of operations in the order in which they occur. Another set of cards must then be strung together, to call the variables into the mill, in the order in which they are required to be acted upon. Each operation card will require 3 other cards, two to represent the variables and constants and their numerical values upon which the previous operation card is to act, and one to indicate the variable on which the arithmetical result of this operation is to be placed. But each variable has below it, on the same axis, a certain number of figure-wheels marked on their edges with the ten digits; upon these any number the machine is capable of holding can be placed. Whenever variables are ordered into the mill, these figures will be brought in, and the operation indicated by the preceding card will be performed upon them. The result of this operation will then be replaced in the store.

The Analytical Engine is therefore a machine of the most general nature. Whatever formula it is required to develope, the law of its development must be communicated to it by two sets of cards. When these have been placed, *the Engine is special for that particular formula*. The numerical value of constants must then be put on the columns of wheels below them, and on setting the Engine in motion, it will calculate and print the numerical results of that formula.

Every set of cards made for any formula will at any future time recalculate that formula with whatever constants may be required. Thus the A. E. will possess a library of its own. Every set of cards once made will at any future time reproduce the calculations for which it was first arranged. The numerical value of its constants may then be inserted. . . .

Besides the sets of cards which direct the nature of the operations to be performed, and the variables

or constants which are to be operated upon, there is another class of cards, called number cards. These are much less general in their uses than the others, although they are necessarily of much larger size.

The A. E. will contain: 1. Apparatus for printing on paper, one, or if required, two copies of its results. 2. Means for producing a stereotype mould of the T. or results it computes. 3. Mechanism for punching on blank pasteboard cards or metal plates the numerical results of any of its computations. Of course the Engine will compute all the T. which it may itself be required to use. . . .

So much for the mechanism of this almost Human Engine. We have yet to glance at its powers of operation; and here again we shall follow the learned Professor. We are now introduced to a conversation between the inventor and his friend Prof. MacCullagh, late of Dublin, on this very subject:

After a long conversation on the subject, he inquired what the machine could do, if, in the midst of algebraic operations, it was required to perform logarithmic or trigonometrical operations. My answer was, that whenever the A. E. should exist, all the developments of formulæ would be directed by this condition—that the machine should be able to compute their numerical value in the shortest possible time. I then added that if this answer were not satisfactory, I had provided means by which, with equal accuracy, it might compute by logarithmic or other T. I explained that the T. to be used must, of course, be computed and punched on cards by the machine, in which case they would undoubtedly be correct. I then added that when the machine wanted a tabular number, say the logarithm of a given number, that it would ring a bell and then stop itself. On this the attendant would look at a certain part of the machine and find that it wanted the logarithm of a given number, say of 2303. The attendant would then go to the drawer containing the pasteboard cards representing its T. of logarithms. From amongst these he would take the required logarithmic card, and place it in the machine. Upon this the Engine would first ascertain whether the assistant had or had not given him the correct logarithm of number; if so, it would use it and continue its work. But if the Engine found the attendant had given him a wrong logarithm, it would then ring a louder bell and stop itself. On the attendant again examining the Engine, he would observe the words “wrong tabular number,” and then discover that he really had given the wrong logarithm, and he would have to replace it by a right one.

Tables are used for saving the time of continually computing individual numbers. But the computations to be made by the Engine are so rapid that it seems most prob. that it will make shorter work by computing directly from proper formulæ than by having recourse even to its own T.

Next we have some insight into the scope of its operations:

The A. E. I propose will have the power of expressing every number it uses to fifty *places of figures*. It will multiply any two such numbers together, and then, if required, will divide the product of one hundred figures by number of fifty places of figures. Supposing the velocity of the moving parts of the Engine to be not greater than 40 feet p. minute, I have no doubt that 60 additions or subtractions may be completed and printed in 1 minute. One multiplication of two numbers, each of 50 figures in 1 minute. One division of a number having 100 places of figures by another of 50 in 1 minute.

Again we are told that “two great principles were embodied to an unlimited extent:”
1. The entire control over *arithmetical* operations, however large, and whatever might be the number of their digits. 2. The entire control over the *combinations* of algebraic symbols, however lengthened those processes may be required. The inventor fairly states: “The possibility of fulfilling these two conditions might reasonably be doubted by the most accomplished mathematician as well as by the most ingenious mechanician.” He then proceeds:

The difficulties which naturally occur to those capable of examining the questions, as far as they relate to arithmetic, are these: (a). The number of digits in *each constant* inserted in the Engine must be without limit. (b). The number of constants to be inserted in the Engine must also be without limit. (c). The number of operations necessary for arithmetic is only 4; but these 4 may be repeated an *unlimited* number of times. (d). These operations may occur in any order, or follow an *unlimited* number of laws.

Next we learn that the following conditions relate to the algebraic portion of the Analytical Engine:

(e). The number of *literal* constants must be *unlimited*. (f). The number of *variables* must be *without limit*. (g). The combinations of the algebraical signs must be *unlimited*. (h). The number of *functions* to be employed must be *without limit*.

This enumeration included 8 conditions, each of which is absolutely *unlimited* as to the number of its combinations. Now it is obvious that no *finite* machine can include infinity. It is also certain that no question *necessarily* involving infinity can ever be converted into any other in which the idea of infinity under some shape or other does not enter. It is impossible to construct machinery occupying unlimited space; but it is possible to construct finite machinery, and to use it through unlimited time. *It is this substitution of the infinity of time, for the infinity of space*, which I have made use of, to limit the size of the Engine, and yet to retain its unlimited power.

The inventor then proceeds briefly to point out the means by which he had effected this change:

Since every calculating machine must be constructed for the calculation of a definite number of figures, the first datum must be to fix upon that number. In order to be somewhat in advance of the greatest number that may ever be required, I chose 50 places of figures as the standard for the Analytical Engine. The intention being that in such a machine 2 numbers, each of 50 places of figures, might be multiplied together, and the resultant product of 100 places might then be divided by another number of 50 places. It seems to me probable that a long period must elapse before the demands of science will exceed this limit.

He then enters upon a number of scientific details, for the purpose of elucidating the 8 conditions above indicated. We cannot follow these; but we may with advantage cite an occasional passage:

The same reasoning will show that if the numbers of digits of each factor are between 100 and 150, then the time required for the operation will be nearly 9 times that of a pair of factors having only 50 digits. . . .

At another part of the machine a series of number cards, resembling those of Jacquard, but delivered to and computed by the machine itself, can be placed. These can be called for by the Engine itself in any order in which they may be placed, or according to *any law the Engine may be directed to use*. Hence the condition (*b*) is fulfilled, viz. *an unlimited number of constants* can be inserted in the machine in an unlimited time.

I propose in the Engine I am constructing to have places only for a 1000 constants, because I think it will be more than sufficient. But if it were required to have 10, or even a 100 times that number, it would be quite possible to make it, such is the simplicity of its structure of that portion of the Engine. . . .

Thus it appears that the whole of the conditions which enable a *finite* machine to make calculations of *unlimited* extent are fulfilled in the A. E. The means I have adopted are uniform. I have converted the infinity of space, which was required by the conditions of the problem, into the infinity of time. The means I have employed are in daily use in the art of weaving patterns. . . .

As soon as an A. E. exists, it will necessarily guide the future course of the science. Whenever any result is sought by its aid, the question will then arise—By what course of calculation can these results be arrived at by the machine in the *shortest time*?

Having thus completely mastered the details of the proposed Analytical Engine, Mr. Babbage then completed the drawings of the Difference Engine No. 2. In the mean time certain portions of the machine had been completed, and were in working order. These latter remained in Mr. Babbage's possession for some time previous to their removal to King's College. During this period many persons of great scientific eminence saw these parts in actual operation. On one occasion there were present Dr. Lloyd, then Provost of Trinity College, and Dr. Robinson, of Armagh. Mr. Babbage proceeds to tell us what took place:

I then proceeded to explain the mechanism of the Engine, and to cause it to calculate T. One of the party remarked two axes in front of the machine which had not hitherto been performing any work, and inquired for what purpose they were so placed. I informed him that these axes had been so placed in order to illustrate a series of calculations of the most complicated kind, to which they contributed. I observed that the T. thus formed were of so artificial and abstract a nature that I could not foresee the time when they would be of any use. This remark additionally excited their curiosity, and they requested me to set the machine at work to compute such a T. Having taken a simple case of this kind, I set the Engine to do its work, and then told them, That it was now prepared to count the natural numbers; but that it would only obey this law as far as the millionth term. *That after that term it would commence a series, following a different, but known law, for a very long period.* That after this new law had been fulfilled for another long period, *it would then suddenly abandon it, and calculate the term of a series following another new law, and so on throughout all time.* Of course it was impossible to verify these assertions by making the machine actually go through the calculations; but after having made the Engine count the natural numbers for some time, I proceeded to point out the fact that it was impossible, by its very structure, that the machine could record any but the natural numbers before it reached the number 999,990. This I made evident to my friends by showing them the actual structure of the Engine. Having demonstrated this to their entire satisfaction, I put the machine on to the number 999,990, and continued to work the Engine, when the result I had predicted soon arrived. After the millionth term a new law was taken up, and my friends were convinced that it must, from the very structure of the machine, continue for a very long time, and then inevitably give place to another new law, and so on throughout all time.

He then reverts to the *Analytical Engine*; but we had better let Mr. Babbage pursue his own narrative:

When they were quite satisfied about this fact, I observed that *in a new engine, which I was then contemplating*, it would be possible to set it so that: 1. It should calculate a T. for any given length of time according to any given law. 2. That at the termination of that time it should cease to compute a T. according to that law; but that it should commence a new T. according to any other given law that might be desired, and should then continue this computation for any other given period. 3. That this succession of a new law, coming in and continuing during any desired time, and then giving place to other new laws, in endless but unknown succession, might be continued indefinitely. I remarked that I did not conceive the time could ever arrive when the results of such calculations would be of any utility. I added, however, that they offered a striking parallel with, although at an immeasurable distance from, the successive creations of animal life, as developed by the vast epochs of geological time. . . .

I continued the subject, and pointed out the application of the same reasoning to the nature of miracles. The same machine could be set in such a manner that these laws might exist for any assigned number of times, whether large or small; also that it was not necessary that these laws should be different, but the same law might, when the machine was set, be ordered to re-appear, after any desired interval. Thus we might suppose an observer watching the machine, to see a known law continually fulfilled, until after a lengthened period, when a new law has been appointed to come in. This new law might after a single instance cease, and the first law might again be restored, and continue for another interval, when the second law might again govern the machine as before for a single instance, and then give place to the original law. This property of a mere piece of mechanism may have a parallel to the laws of human life. . . .

But the workings of machinery run parallel to those of the intellect. The Analytical Engine might be so set, that at definite periods, known only to its maker, a certain lever might become movable during the calculations then making. The consequence of moving it might be to cause the then existing law to be violated for one or more times, after which the orig. law would resume its reign. . . .

It does not clearly appear how much of the *Analytical Engine* was ever actually constructed. Certain portions of *Difference Engine No. 2* appeared also available for the A. E. In *Passages from the Life of a Philosopher*, pub. 1864, Mr. Babbage says [p. 449], "If I survive some few years longer, the *Analytical Engine* will exist, and its works will afterwards be spread over the world." He died in Oct. 1871, never having completed the A. E.; but he had prepared for the press a work thereon, which we notice under date 1864.

The next machine we have to notice is one of Russian invention, by M. STAFFEL. The precise date of its invention we cannot ascertain. The mechanism is 18in. in length, 9in. in breadth, and 4in. in height. It consists of 3 rows of vertical cylinders: the first row contains 13; the 2nd 7; and the 3rd 7. Upon each of the cylinders in the first

row are 10 notches, corresponding with the units 1 to 10. Within each of these cylinders is a small pulley, in connexion with a lever, set in motion by a slider, which, when the cylinder has been turned from either 9 to 0, or 0 to 9, sets in motion the lever, and communicates its action to wheels which carry over the figures. The pulley connected with the cylinder the furthest from the handle, is in connexion with the hammer of a bell. The purpose of this bell is to give warning to the operator on committing an error, and constitutes a most important add. to the machine, particularly in the operation of division. Upon each of the cylinders in the 2nd row 10 units are placed. These 7 cylinders are so fixed upon their axes, that they can bodily be moved right and left, and fixed at any part, so that the cyphers on the two cylinders can be made to correspond. This cylinder is furnished with a spike, which lays hold of and works the third row of cylinders. The internal communication of each of the parts is brought about by means of a connecting wheel, furnished with 9 movable pegs, which are set in motion by means of an excentric incision in the dial.

The machine is capable of performing addition, subtraction, multiplication, and division; and of extracting the square root. The operation of *addition* is performed as follows: By simply placing one line of numbers upon the second row of cylinders (the index pointing to addition), and turning the handle till it stops, these numbers are trans. almost instantly to the first row of cylinders, and so on successively till all the numbers to be added are trans., and their sum is shown on the top row. In performing *subtraction*, the first part of the operation is the same as in addition, but on placing the 2nd line of figures on the 2nd row of cylinders, the pointer being placed to subtraction, the handle is turned the opposite way, or against the motion of the sun, and the difference of the two numbers is shown on the upper line. The operation of *multiplication* is performed by placing the multiplier and the multiplicand on the 2nd and 3rd rows of cylinders, and then, the index pointing to multiplication, the product will be found on the first cylinder. The operation of *division* is very similar, excepting that the handle is turned as in subtraction.

In the performance of the square root, the following add. mechanism is brought into play. Between every division of the cylinder, in row 2, a small wheel is placed, and near it a projecting piece which acts upon a lever. When the projecting piece is near the word "rod" engraved on the cylinder, on turning the handle the figures increase by 1. This by other mechanism is connected with the other two rows of cylinders. The operation of the square root is performed directly, without any guessing at numbers; but is comparatively rather a long process.

M. Staffel has also invented a small machine for the performance of the add. and subtraction of fractions, whose denominators are 10, 12, and 15. By enlarging the machine, this number could be increased, and the power of the instrument extended. [See 1851.]

About 1850 M. THOMAS (de Colmar) invented a small machine adapted for the performance of the first four rules of arithmetic, and indirectly capable of being made to extract the square root. The instrument consists of two rows of cylinders, the first row containing 16, the 2nd 8—the former are movable, the operation at each step being changed tenfold. The principle of the instrument is that multiplication is in reality the continual addition of itself as many times as there are units in the multiplier; and division that of continued subtraction of the divisor. The instrument is adapted for the multiplication of numbers whose product is expressed by less than 16 figures. To multiply 5321 by 3256 the following is the process: The first number is placed on one series of cylinders; the number 6 is placed on one of the cylinders of the 2nd row. On the handle being turned (in this machine always in the same direction), the number 31,926 appears; the upper row is moved through one division; the handle turned again, and so on till in a very short time the number 17,325,176 appears. [See 1851.]

This instrument, now called the "Arithmometer," and which is about 18in. long, by 6in. wide, and 1½in. deep, has been greatly improved since it was first invented; and it is now in very general use in England and in France. [See 1871.]

HERR WERTHEIMER has invented several calculating machines, adapted for the performance of addition and subtraction of numbers and moneys of this and other countries. Each machine consists of a box, with a metal plate divided into 9 indexes, with semicircular notches, under which are placed a succession of holes. Round the indexes numbers are engraved, and the semicircular notches are furnished with teeth, and a pointer to insert between the notches, for the purpose of bringing the notch opposite any particular figure, from right to left. This latter operation is attended with some hazard, and may cause inaccuracy. For this and other reasons the machines have not come into general use. They are however very ingenious. [See 1851.]

M. SCHILT, a Swiss, has invented a simple calculating machine, or instrument, which can perform the first operation of arithmetic only.

M. LALANNE, a Frenchman, has invented a calculating rule, upon new principles. It consists of a graphic table formed entirely of right lines, with which all calculations usually performed by the sliding rule can be performed to within 1-200th of the true result.

In 1851 came about the great gathering of the mechanical and other arts of the world.

A department was instituted for "Philosophical Instruments, and processes depending on their use," known as Class X. In this department was included calculating machines. The jury appointed to report upon this class contained the following among its 12 names—Sir David Brewster, Sir John Herschel, Mr. James Glaisher. Neither Babbage's nor Scheutz's machines were exhibited—indeed the latter was not then finally completed. Regarding Babbage's machine, then for several years past deposited at King's College, it is impossible to account for its omission: it may have arisen from official indifference; from jealousy; or from shame at its incomplete condition. Confining themselves therefore simply to the machines which were exhibited, the jury gave the first place to Staffel's, "which on examination seems to combine accuracy with economy of time, and works easily and directly." Again, "upon the whole it must be considered that Mr. Staffel has made an instrument possessed of considerable powers, and that great praise is due to him. The double motion of the handle, as well as the warning bell, are important improvements." Prize medal awarded. M. Thomas (de Colmar) "exhibits the next best calculating machine in the Exhibition, and has combined the two essentials of economy of time and accuracy of results." Again, "on trying the machine, the number 1 was almost instantaneously taken from 10,000, giving the difference 9999 accurately; the performance of this operation is generally a severe test to these machines." Prize medal awarded. Regarding Herr Wertheimer, the jury say, "The machines are ingenious, but they are much wanting in the essentials of such machines, economy of time, and unerring accuracy." They were awarded Honourable Mention. The like was awarded to M. Schilt, and to M. Lalanne. Dr. Roget's sliding scale (as improved by Brooker) was also exhibited.

In 1852 Mr. Willich, author of the well-known tables bearing his name, said, "We have but little hope that the splendid prospect opened by Mr. Babbage's calculating machine will ever be realized, the aid of Gov. having been withdrawn." He then adds: Is there no chivalrous *millionnaire* in this country anxious to immortalize his name by being associated with the successful carrying out of Mr. Babbage's calculating machine? A slice of a million would be well bestowed to obtain such a result." No one has yet come forward.

By 1853 the machines of the MESSRS. SCHEUTZ was finally completed, on the principles of the working model which had been prepared 10 years previously; and which we have already described. The difficulties in the way of its completion had been very considerable. In 1851, after a further inspection by a Committee of the Royal Academy, Herr Geo. Scheutz had applied to his Gov. for means to construct a larger and more perfect machine. This application was refused. Afterwards, however, the Diet for Stockholm did grant a sum of £280, upon condition that the machine should be completed before the end of 1853. It was so completed; after which a further £280 was voted, making in all £560.

In 1854 the inventors brought their machine to England, and it was first exhibited at Bermondsey, at the manufactory of Messrs. Bryan Donkin & Co. In 1855 the machine was exhibited in the Paris International Exhibition, and the inventors obtained a gold medal. Mr. W. Gravatt, an English engineer, and F.R.S., took great interest in the invention, and introduced it to the notice of the Royal So. The machine was brought back to Lond., and was set to work to print tables. The following is an authentic description of it, and its capabilities:

The size of the whole machine when on its proper stand and protected by its cover is about that of a small square pianoforte. The calculating portion of the machine, which appears in the front of the drawing, consists of a series of 15 upright steel axes passing down the middle of 5 horizontal rows of silver-coated numbering rings, 15 in each row. Each ring being supported by and turning concentrically on its own brass shelf, having with it a hole rather less than the largest diameter of the ring. Round the cylindrical surface of each ring are engraved the ordinary numerals from 0 to 9, one of which, in each position of the ring, appears in front, so that the successive numbers shown in any horizontal row of rings may be read from left to right, as in ordinary writing. The upper row exhibits the number or answer resulting from the calculation of 15 places of figures, the first 8 of which the machine stereotypes. The numbers seen in the 2nd row of rings constitute the first order of differences, also to 15 places of figures, if that number be required; and the 3rd, 4th, and 5th row of rings in like manner exhibit the 2nd, 3rd, and 4th order of differences. Any row can be set by hand, so as to present to the eye any number expressed according to the decimal scale of rotation—such as the number 987654321056789, the first 8 figures of which, if in the uppermost row, would, on being calculated by the machine, be immediately stereotyped. But by simply changing a ring in each of two of the vertical columns, the machine can be made to exhibit and to calculate numbers expressed in the mixed senary system of notation, as in that of degrees, minutes, seconds, and decimals of a second. Thus, for instance, if the result 87°43'24.687356402 were indicated, in the upper row of rings, it would be stereotyped 87 degrees, 43 minutes, 24.69 seconds.

While this process is going on, the argument proper to each result is at the same time also stereotyped in its proper place; nothing more being required for that purpose than to set each row of figure rings to differences previously calculated from the proper formula, and to place a strip of sheet lead on the slide of the printing apparatus; then by turning the handle (to do which requires no greater power than that which is exerted in turning that of a small barrel organ), the whole T. required is *calculated and stereo-moulded in the lead*. By this expression is meant that the strip of lead is made into a beautiful stereotype mould, from which any number of sharp stereotype plates can be produced ready for the working of an ordinary printing press.

At the average rate of working the machine, 120 lines per hour of arguments and results are calculated, and actually stereotyped ready for the press. It is found on trial that the machine calculates and stereotypes, without chance of error, 2½ pages of figures in the same time that a skilful compositor would take merely to set up the types for one single page.

The machine was shortly afterwards purchased for £1000 by Mr. Rathbone, an American merchant, and by him presented to the Dudley Observatory at Albany, N.Y., where it still remains. Mr. Babbage was not slow to bear his testimony to the perfection and in some respects the originality of the machine.

In 1854 Mr. W. T. Thomson read before the Inst. of Act. a paper on *Decimal Numeration and Decimal Coinage*. The paper, which is printed in vol. iv. of *Assu. Mag.*, exhibits much quaint scholarship, of which we have been glad to make some use. It contains a division, "Aids to Calculation," coming within the scope of our present art.

The Paris Exposition Universal of 1855 was remarkable for the number and ingenuity of the machines which performed arithmetical operations. Pre-eminently above all others stood the Swedish machine. It is honourable to France (says Mr. Babbage), that its highest reward was deservedly given to the inventor of that machine; whilst it is somewhat remarkable that the English Commissioners appointed to report upon the French Exhibition omitted all notice of these Calculating Machines.

In the *Journal of the So. of Arts*, 27 April, 1855, there appeared a brief description of Scheutz's machine, which develops one feature not previously noted:

The machine *calculates* to 16 figures, but *prints* to 8 only; and by a singularly ingenious, and at the same time simple, contrivance, the 8th figure in the T. is printed, not in all cases as calculated, but with a correction when required, for the 9th and subsequent figures omitted in the T. Thus whenever the 9th figure as calculated amounts to 5 or more, it is more accurate that the 8th or final figure in the T. should be printed by the addition of one: this the machine accomplishes.

In 1856 there were pub. : (1) *Observations by Charles Babbage, on the Mechanical Notation of Scheutz's Difference Engine, prepared and drawn up by his Son, Major Henry Prevost Babbage, addressed to the Inst. of Civil Engineers*. The same is pub. in the *Minutes of Proceedings* of that So. vol. 15. (2) *Observations addressed to the Royal So. on the Swedish Tabulating Machine of Geo. Scheutz*. This latter paper we believe was not by Mr. Babbage.

In the *Journal of the So. of Arts*, 3rd July, 1857, there was an account of Scheutz's machine from which we have drawn some of the preceding details.

It had been a matter of deep regret on the part of many of our leading scientific men that Scheutz's machine had ever been allowed to leave these shores. The more so as there was at the time work required to be done, which it could have accomplished. We may here quote Dr. Farr:

At that time it appeared to be desirable to construct a new life T. from the materials accumulated at the Gen.-Reg. office by the regis. of births and deaths in 17 years (1838-54), and by the two enumerations of the pop. of E. and W. in 1841 and 1851. The T. for single lives, and the various combinations for joint lives, male and female, involve a great deal of numerical computation; and as it was found that the calculations of the series, thrown into a form which is described elsewhere [paper read before Royal So., 7th April, 1859], could be performed by the machine, the Reg.-Gen. was pleased to bring the matter under the notice of Sir Geo. Lewis, then Sec. of State for the Home Depart., and in doing so he pointed out the importance which had been justly attached by the most scientific men of the country, by H.M. Gov., and by Parl., to the machine of Mr. Babbage, for which, though it had not been completed, £17,000 of money had been granted, besides the money expended by Mr. Babbage himself. . . . The Astronomer-Royal concurred with the Reg.-Gen. in advising H.M. Gov. to order a new machine.

The request was granted. A contract was entered into with MR. SCHEUTZ and the MESSRS. DONKIN, who agreed to construct a new machine, with several improvements, for the sum of £1200. In the work several new tools were required, and workmen had to be specially instructed. From this expense the contractors did not shrink. The machine was completed, and was reported to be superior to the first.

Mr. Bryan Donkin reported that the machine consists of about 4320 pieces, of which 2054 were screws; 364 compose the chain; and 902 constituted the other parts of the mechanism. The weight, exclusive of the case, is about 10 cwt. The machine was shaken out of order on its way from the factory to Somerset House. It was, however, soon set in order, and put to work. [See 1862 and 1864.]

In January, 1860, MR. JARDINE HENRY brought before the *Royal So. of Arts*, in Edin. an instrument which he had invented for the construction of Life Annu. T. without the use of logarithms. His instrument accomplished by a single movement all multiplications necessary in forming L. Annu. Commutation T. We can only give a brief description of the invention. A right-angled triangle with two equal sides is divided into 10,000 equal parts. Lines are drawn from the left hand, where zero stands to the numbers in the perpendicular side, representing the numbers alive at the end of each year from birth to death, say out of 10,000 persons born. A vertical sliding scale on T, also divided into 10,000 equal parts, is adjusted so as to slide upon the triangle. The principal use of the instrument was said to be to furnish Joint Life Tables. It was not said to arrive at perfect accuracy; but its results were "sufficiently correct for all practical purposes." From 400 to 600 values could be read off the instrument with complete ease; and the labour of constructing T. compared with the use of logarithms *reduced to one-fourth*. [See 1867.]

In the International Exhibition in London, in 1862, there were exhibited [Class XIII.] several calculating machines, or arithmetical instruments, of which we have not previously made any mention, and concerning which we have very few accurate details.

The first of these is the invention of HERR WIBERG, of Malmö, Sweden. It is a small difference engine of cylindrical form, in which the difference axes are arranged round the

circumference of a circle, in place of lying in one plane, as in the machines of Messrs. Babbage and Scheutz. This machine, however, was so much deranged in its transit to the Exhibition, that the jury had no means of testing its mode of action. Herr Wiberg also exhibited a smaller calculating machine, like the other of a circular form, very compactly arranged, and very neatly executed. It was presumed to be for the purposes of multiplication and division; but no precise information could be obtained.

M. C. X. THOMAS exhibited several well-constructed machines for multiplying to the extent of 7 figures by 7. These seem to be the same we have spoken of as the invention of M. Thomas de Colmar. Medal awarded.

SIGNOR T. GONNELLA, of Florence, exhibited a calculating machine of very simple form and construction, but the jury considered "probably of little practical utility."

Mr. Babbage's Difference Engine No. 1 (as far as completed) was also exhibited.

The jury, consisting of 13 members, among whom were Sir David Brewster, Mr. James Glaisher, and Prof. Wheatstone, say in their report :

These eminently ingenious and practically useful contrivances have undergone considerable development since the former Exhibition of 1851; but that progress, as it will presently appear, is not completely represented in the present Exhibition. Calculating machines, as they at present exist, are essentially of two kinds. In the simpler form the operation of addition is performed by causing a figure wheel to advance a given number of unit spaces by moving through the same number of spaces or wheel with which it is in gear. The process of multiplication is merely the repetition of successive additions; and subtraction and division are merely the inverse processes of the former. . . .

Then follows a short description of Babbage's and Scheutz's machines, in which occurs the following, "It must suffice to observe that in the engine of Messrs. Scheutz these arrangements [by which the number on any given wheel is transferred to the wheel above it] are more simple, and apparently not less efficacious than in that of Mr. Babbage."

Scheutz and Donkin's machine was not exhibited. It was indeed in use at the time, calculating and printing portions of the *English Life T.* No. 3. A description of it and examples of its work were distributed, and many scientific men visited and saw it in operation during the Exhibition. It may be seen at Somerset House now, by any properly accredited person. In the description so circulated occur the following passages :

The machine has been extensively tried, and it has upon the whole answered every expectation. But it is a delicate instrument, and requires considerable skill in the manipulation. . . . It approaches infallibility in certain respects, but it is not infallible, except in very skilful hands. The weakest point of the machine is the printing apparatus, and that admits of evident improvement. The machine calculates and print series of a particular kind; and to the execution of these operations its utility is therefore limited. Its scope is less ambitious than the new analytical machine for which Mr. Babbage abandoned his first invention, as that machine seeks to embrace the whole field of analysis. [See 1864.]

In 1864 there was announced for pub. by the late Mr. Babbage : *Hist. of the Analytical Engine*. The vol. was to contain a reprint of chapters 5-8 of the *Passages from the Life of a Philosopher*. Also a reprint of translation of General Menabrea's *Sketch*, etc. [See 1842.] We believe this work never was pub.

In the same year there was published the *English Life Table: Tables of the Lifetimes, Annu. and Prems.; with an Intro. by Wm. Farr, M.D.*, etc. In a letter to the Reg.-Gen., forming such Introduction, Dr. Farr says: "Several of the series were calculated by Scheutz's machine. . . . It gave us an opportunity of testing its working powers in England, where Mr. Babbage explained the principles, and first demonstrated the practicability of performing certain calculations and printing the results by machinery." The machine was employed to introduce the element of int. into the various T. In an appendix [p. cxxxix] the learned Doctor enters upon further details, while also replying to a complaint of Mr. Babbage regarding the non-exhibition of the machine, by which circumstance the latter considered the constructors lost a medal, and many scientific men were disappointed. Dr. Farr says that the work upon which the machine was employed was much required; and that quietude was essential to the proper conduct of its operations :

The machine required incessant attention. The differences had to be inserted at the proper terms of the various series; checking was required; and when the machine got out of order it had to be set right. . . . The idea had been as beautifully embodied in metal by Mr. Bryan Donkin as it had been conceived by the genius of its inventors; but it was untried. So its work had to be watched with anxiety, and its arithmetical music had to be elicited by frequent tuning and skilful handling in the quiet most congenial to such productions. This vol. is the result; and thus—if I may use the expression—the soul of the machine is exhibited in a series of T. which are submitted to the criticism of consummate judges of this kind of work in England and in the world. If their approving testimony be won, it will be some compensation to the English workmen—the firm of Messrs. Donkin, and the Messrs. Scheutz, for the loss of a medal at the Exhibition of 1862.

It will be generally admitted that this beautifully printed and useful vol. of between 700 and 800 pages, mainly of T.—although not *all* the produce of the machine—must remain a very enduring monument of its usefulness; and it ought not to be forgotten that it is prob. to Dr. Farr that we really owe the existence of this particular machine.

In 1864 also, Dr. Farr read a paper before the Brit. Asso. at Bath, on *Life Tables, by the Swedish Calculating Machine*—with Photographs by A. Claudet; and at the same meeting Major-Gen. Hannington read : *Some Remarks on the French Calculating Machine* [M. Thomas de Colmar's]. Abstracts of these papers were not printed in the *Official Rep.*

In the *Companion to the (Brit.) Almanack*, 1866, there is a paper by Mr. F. J. Williams, *The Swedish Calculating Machine at the General Regis. Office, Somerset House*; wherein is a very clearly written hist. of the machine, and of its performances. He also points out

that the first adaptation of this machine to the computation of L. T. was made by Dr. Farr.

In 1867 there was read before the Inst. of Act. a *Memoir on Instrument for furnishing the D. numbers to four figures each, in Two Joint Life Annu. T. on any basis*. The paper was prepared by Mr. Jardine Henry; and an abstract of it appears in the *Assu. Mag.* [vol. 14, p. 212]. We have already given some account of this instrument under date 1860.

In (or about) 1868 MR. C. H. WEBB invented and patented in the U.S. a very simple and durable arithmetical instrument, called an "Adding Machine." It consists of two disks in the same plane, moved by an iron-pointed pencil or style. One disk counts units up to 100; the other counts hundreds up to 5000. It is used by practical actuaries on that side of the Atlantic.

In 1869, or prob. earlier, PROF. ELIZUR WRIGHT invented a Calculating Machine having the advantage of great simplicity of construction. Its chief functions are multiplication and division. The machine consists of two wheels or cylinders mounted on one axis—the outer surface of the cylinder being covered with figures. There are pointers attached. If two numbers are to be multiplied, one pointer is placed opposite one number, and one opposite the other. A slide is moved, one wheel turned, and the product appears opposite the pointer. Division is accomplished with the same ease. It gives correct results to 5 places. The *Ins. Times* of N.Y. says:

For all practical computations of prems., reserves, and dividends, as well as for interest calculations, it seems to us really invaluable. It has been tested by long and constant use, and has proved reliable in every sense. . . . In every life ins. office in the country there may be found a well-thumbed T. of logarithms. These T. are extremely useful, but Mr. Wright's machine is as much superior to them as they are to the child's multiplication table.

MR. JOHN SANG has invented an instrument of calculation called a "Platometer." It consists of a cone mounted upon two wheels. Mr. Edward Sang gives us the following description, and of the operation and uses of the instrument:

Thus let us take Mr. Sang's Platometer, and instead of making it to roll like a carriage on wheels, let us fix the frame, leaving the wheels and cone free to turn; and seek to apply it to such a solution as this: "to find the value of an assu." We shall divide along the periphery of one of the wheels parts to represent £1, and in the direction of the slope of the cone, other parts to represent the decreasing values of £1, payable $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{8}$, $\frac{3}{16}$, $\frac{4}{32}$ years hence. The product of £1 payable for each person who dies in the year, into the value of £1 for that year, is obtained by bringing the index wheel to the proper distance from the apex of the cone, and then turning the cone round by as many divisions as there are deaths in the mort. T. And if we perform this operation regularly for each year during the whole of the T., the index wheel will at once record the sum total of all these products.

MR. BEVERLEY, of Dunedin, New Zealand, has since invented a modification of the Platometer of Mr. John Sang. It exhibits the same principle brought out in a different way. Mr. Edward Sang gives us the following illustration of its use:

If a cylinder be dragged along a surface endwise, it does not turn; if it be moved in a direction at right angles to its axis, it rolls; in other positions it partly slides and partly rolls, and in general the quantity of turning is proportional to the sine of the angle between the direction of the axis and the direction of the motion. Taking advantage of this law, Mr. Beverley arranges his instrument so that the quantity of angular motion is proportional to the distance of the tracer from a certain straight line; it is at the same time proportional to the extent of the actual displacement, and hence the indication is proportional to the area of the rectangle.

Mr. Edward Sang adds:

Both of these instruments however, and indeed all machines of this kind, depend on a combination of sliding and rolling, and are thus liable to considerable inexactitude in their indications. They fall far short of the certainty which attends the use of toothed wheels, and would be unfit for such calculations as come under the notice of the actuary.

In 1871 Major-Gen. Hannington read before the Inst. of Act. a paper, *On the Use of M. Thomas de Colmar's Arithmometer in Actuarial and other Computations*. The paper is for the most part technical; but we take the following passages from it as supplemental to the description we have already given of the instrument:

Division is less tractable than multiplication, but so long as the divisor contains no more than 8 figures, the dividend and the quotient may be unlimited; for the remainders can be trans. to the left or highest place on the slide; the partial quotient be recorded, then effaced, and the operation be carried on to any extent. But a divisor of more than 8 figures offers difficulties. . . . Among the powers of the machine may to some extent be included that of the Difference Engine; for a second difference can often be supplied by the operator. For instance, a table of square numbers, having the second difference constant, requires merely that the operator should continually add 2 to the difference on the face of the machine. Thus, in fact, any quadratic form could easily be tabulated. Hence, also, two or more operators, working together on separate machines, might compute T. requiring differences of the third or higher orders. Such an application of these machines might have important uses. . . . Survivorship assu. may be computed. . . . What is here shown brings out one of the most useful powers of the machine, namely, that of giving the *sum* of a series of *products*, without exhibiting the several quantities. . . . A simple and striking example of continuous calculation is afforded in the construction of temporary annu. . . . In conclusion I may say that, having had considerable experience in act. computations, I have never found the machine fail to afford help; though it may happen that the right process is not always indicated by the seemingly most appropriate formula. The machine asks for peculiar methods, and such as are not easily to be described.

The paper is printed in the *Assu. Mag.* [vol. xvi. p. 244].

In the same vol. there is also a short paper of obs. on this instrument by Mr. W. J. Hancock, Act. and Sec of the *Patriotic Assu. Co.* of Dublin. His remarks are in the

main directed to answer some remarks of Mr. Sang, in his Lecture to be presently quoted. Mr. Hancock, after giving various examples of its use, says :

I think it is therefore manifest that the machine is far superior to the long multiplication by hand, when 8 figures by 8 figures are involved ; and that it saves mental labour, time, and risk of error. Of course the value of the machine diminishes with the [diminishing] number of figures required to be dealt with, and is not, perhaps, marked when the figures in multiplicand or multiplier do not exceed 2. If a man has not half a mile to travel, there is not much difference between walking and going in a railway train ; but when the distance is one or two hundred miles, the advantage of going by train instead of walking becomes evident.

In 1871 also Mr. Edward Sang delivered a Lecture before the Act. So. of Edinburgh, *On Mechanical Aids to Calculation*. The paper is full of interest, and throws light upon several of the contrivances here discussed. For instance, he gives a simple illustration of the first element in machine-counting :

By arranging a second wheel for tens, and so placing it as that at each turn of the units wheel it shall be moved one step, we are enabled to count to 100 ; and by continuing this arrangement, we can carry the numerations to any desired extent. Such is the construction of ordinary counting machinery. In some of these machines the movements are continuously connected by means of toothed wheels, as in the cases of clockwork and of the ordinary gas meter index. In others the motions are by jerks ; the tens wheel remaining at rest until the units are passing from 9 to 0, at which time the tens are advanced one step ; and the indication changes say from 69 to 70. Some of these latter machines are so contrived as that the wheels are locked until the carrying takes place. Such are the machines used for regis. the number of operations performed by the bank-note printing press. From their very construction continuously connected machines are always locked. Such counting machines are of great use in many situations, as at loading and landing wharves, in large warehouses, at turnpike gates, and in general wherever extensive tale has to be made, or wherever a check is required upon operations. They receive various forms according to the purpose for which they are intended ; and by modifications and extensions, they become the calculating machines to which our attention is principally to be directed.

He speaks well of Thomas's machine. Thus, when noting the time required for operations under certain mechanical methods, he continues :

The contrivance for economizing that time is exceedingly ingenious in Thomas's machine. He causes all the cylinders to be actuated at once by the working handle, so that all the additions go on nearly at once. This however would cause confusion in the carrying. He therefore makes the index wheels entirely independent of each other, and arranges the carrying in another way. On each index wheel there is fixed a stud to come in contact with a lever whenever the indication passes from 9 to 0, and so to push this lever aside ; and a detent is provided to keep this lever back after the stud has passed onwards. This lever brings into action the carrier fixed on the axis, and this carrier only acts after the add. by the bars has been completed. Thus by arranging the cylinders one tooth in arrear at each step, the carrying from one rank to another is completely effected, and the whole add. completed by one turn of the handle. By help of this machine, then, we can perform add. ; and by turning the handle repeatedly, we can perform successive add., and so form an equi-different progression.

Mr. Sang takes a wide range of the subject. We have already quoted his obs. in several parts of this paper ; we cannot follow him further. We are disappointed with some of his conclusions. He says, indeed :

The great benefit to be conferred upon us by calculating machines has always been looked for in the compilation of T. ; and that benefit is expected in two ways, one in rapidity, and one in certainty of operation.

But he concludes his learned paper as follows :

Thus, on the whole, arithmeticians have not much to expect from the aid of calculating machines. A few T., otherwise very easily made, comprise the whole extent of our expected benefits ; and we must fall back upon the wholesome truth that we cannot delegate our intellectual functions, and say to a machine, to a formula, to a rule, or to a dogma, I am too lazy to think ; do, please, think for me.

The Editor of the *Assu. Mag.* [in vol. xvi. of which the Lecture is printed] says, by way of appended note, that he thinks Mr. Sang overlooks the advantage of the arithmometer, "when used for a very long series of calculations," viz. that the work is almost entirely mechanical, "and in consequence much less fatiguing, after a moderate degree of use, than direct calculation, which requires a greater mental strain." We go a step further, and express a belief that the "arithmometer," clever as it is admitted to be by all familiar with its use, has not attained the *ultima thule* of our calculating appliances. We believe those great mechanical powers, foreshadowed and demonstrated by Babbage, will be yet brought into practical use ; and it is in that view, and in that belief, that we have gone so fully into the details of his contrivances in the present art.

[Since the earlier part of the preceding art. has been printed we have been informed, by Dr. Farr, that Col. Babbage has now completed another portion of his late father's Analytical Engine ; so that after all there seems a prospect of realizing that which many scientific men, both in Europe and America, had long regarded as almost hopeless. More exact information on this point will very soon be made public. We also learn from Mr. Edward Sang, of Edin., that the full description of Mr. John Sang's *Platometer* appears in the 4th vol. of the *Trans. of the Royal Scottish So. of Arts* ; and that of Mr. Beverley's in the 7th vol. of same *Trans.* In vol. iv. of these *Trans.* there is a description of another *Platometer* by Mr. James Clerk Maxwell ; but this was never constructed.

Mr. R. P. Hardy announces some Valuation T., deduced from *Experience T.* No. 2, "calculated by means of the *Arithmometer* of M. Thomas de Colmar" (Laytons).]

CALCULATION.—From the Latin, *Calculus*, a small pebble—the Romans having frequently made use of pebbles in casting up accounts. [CALCULUS.]

CALCULATION, AIDS TO.—In a paper, by Mr. W. T. Thomson, on *Decimal Numeration and Decimal Coinage*, which was read before the Inst. of Act. in 1854, and is printed in

vol. iv. of *Assu. Mag.*, there is a division, "Aids to Calculation," in which are given some details concerning various arithmetical instruments, from which we have quoted in our art. on CALCULATING MACHINES.

CALCULUS [in Mathematics].—In modern language the term *Calculus* is employed to denote any branch or any operation of mathematics which requires or may involve numerical calculation, and therefore may be applied to the whole of the mathematical sciences excepting pure geometry. Thus that part of algebra which treats of exponents is called *Exponential Calculus*. In like manner the phrases *Calculus of Definite Integrals*; *Calculus of Finite Differences*; *Calculus of Functions*; *Calculus of Probabilities*; *Calculus of Variations*, etc., etc., are used to denote certain branches of the higher mathematics.—*Brande*. [DIFFERENTIAL CALCULUS.] [INTEGRAL CALCULUS.] [VARIATIONS.]

CALCULUS [in Medicine] (from *Calx*, a lime or chalk stone).—A solid or unorganized concretion found in various parts of the human body, and commonly called *stone* or *gravel*. It is most frequently formed in the urinary organs.

CALCULUS OF FINITE DIFFERENCES.—This calculus was created by Dr. Brook Taylor, a learned English mathematician, in his work *Methodus Incrementorum*, pub. 1715. In vol. viii. of *Assu. Mag.* will be found a paper by Mr. W. Curtis Otter, *On the Calculus of Finite Differences, and its Application to Problems in the Doctrine of Compound Int. and Certain Annu.*

CALCULUS OF PROBABILITIES.—See PROBABILITIES, MATHEMATICAL THEORY OF.

CALCUTTA.—The capital of Bengal and Brit. India. The first settlement of the English here was made in 1689; became a separate Presidency in 1707. On 20th June, 1756, the fort taken from the English—146 British crammed into the "Black-Hole prison," a dungeon about 18 feet square, from whence only 23 came forth the next morning alive. Retaken by English 1757. The Hooghly river, which runs up to Calcutta, is particularly dangerous for navigation in consequence of the "Bore." On 5th Oct., 1864, a great cyclone, followed by a "bore," did enormous damage to shipping and houses. On 1st Nov., 1867, another cyclone; about 30,000 small houses unroofed, and much damage done to shipping.

In 1850 the pop. of the city was estimated at 413,582. In 1866 a regular census was taken, but not without considerable difficulty, arising from the prejudice of the natives, etc. There were found to be 58,892 houses. The pop. was distributed as follows: Europeans, 11,224; Mussulmans, 113,059; Hindus, 239,190; the remaining pop. being made up of Eurasian Greeks, Armenians, Asiatics, Jews, Parsees, Africans, and Chinese. The suburbs of the city were estimated at 250,000, making the entire pop. 629,924.

From a report by the Health Officer of the Census Committee it appears that in 1865 there were 304 deaths amongst an aggregate European pop. of 11,224, thus giving the mort. rate as 2.71 p.c. But it has been pointed out that these figures should be taken with reserve, as few Europeans remain to die in Calcutta. That which most materially swells the death-rate of Calcutta is the mort. prevailing amongst common soldiers and sailors, who go ashore into the Lall Bazar and other places of resort, and drinking arrack and other vile compounds, stagger out and remain in the open air all night, thus causing almost certain death. The mort. of Calcutta, reckoned according to Creeds, is: Christians, 5.19; Hindus, 6.41; Mussulmans, 5.83. The highest ages surviving in reference to nationality were: Europeans, 87; Eurasians, 104; Armenians, 84; Jews, 88; Mussulmans, 100; Hindus, 116.—*Tait*.

In 1848 Lieut.-Col. Sykes read a paper before the Brit. Asso. at York, *On the Pop. and Mort. of Calcutta* [reprinted vol. viii., *Statistical Journal*]. In 1848 Dr. Cuthbert Finch read before Brit. Asso., at Swansea, a paper, *Vital Statistics of Calcutta* [reprinted vol. xiii., *Statistical Journal*]. In 1867 Mr. P. M. Tait read before the Brit. Asso., at Dundee, a paper, *On the Pop. and Mort. of Calcutta*. An abstract of the paper appears in the report of the Asso. for that year, from which we have drawn some of the above facts.

Between 1797 and 1810 the following marine offices were founded in Calcutta: *Asiatic Ins. Co.*; *Calcutta Ins. Co.*; *Calcutta Ins. Office*; *Ganges Ins. So.*; *Hindustan Ins. So.*; *India Ins. Co.*; *Phoenix Ins. So.* Many of these were started at that period in consequence of the high rate of duty charged in England, and the monopoly then existing with the two Marine Ins. Corps.

There are various local marine, and F. and L. ins. asso. in the city; and several of the Brit. offices have agencies and transact considerable bus. There is a fire brigade with fire escapes.

Much more information regarding the mort. of Calcutta will be given under INDIA.

CALDER, ALEXANDER, was Man. of *Ins. Co. of Scotland* from 1862 to 1868.

CALEDONIAN INSURANCE CO., founded in Edinburgh in 1805, with an authorized cap. of £100,000, in 1000 shares of £100. The cap. was afterwards increased to £150,000; and more recently to £300,000, in shares of the same denomination. The paid-up cap. of the Co. now stands at £29,907 10s.

The first D. of asso. of the Co. was executed in June, 1805, and was regis. in the books of the Council of Session in Scotland on the 9th Aug., 1805. A charter was granted to the Co. under the seal appointed by the Treaty of Union, "to be kept and used in Scotland in place of the great seal formerly used there;" sealed 9th May, 1810.

The first Man. of the Co. was Mr. Wm. Braidwood ; the first Sec., Mr. Wm. Dickie.

The bus. of the Co. was limited in the first instance to F. ins. only. The first quarter's return of duty amounted to £661 12s. 7d. In 1836 its return for the year had reached £5182. In 1850 it had reached £8106. Further details will be found under FIRE INS. DUTY. Its F. bus. has always been made the subject of careful selection.

By art. of agreement, executed in 1833, and regis. in the books of the Council of Session in Scotland, under date 30th Dec. in that year, it was agreed that L. ins. should be added, "and that from thenceforward the bus. of F. ins. and the bus. of L. ins. should form the bus. of the Co. In 1840 the Co. commenced bus. in Lond.

In 1846 the Co. obtained a special Act of Incorp.—9 & 10 Vict. c. xlv.—*An Act for Incorp. the "Caledonian Ins. Co."*; for enabling the said Co. to Sue and be Sued, to take and to hold Property ; for confirming the Rules and Regulations of the said Co. ; and for other purposes relating thereto. This Act received the Royal Assent 18th June, 1846. The Act limits the bus. of the Co. to Gt. Brit. There is a provision regarding the shares of the Co. which we shall speak of under LEGISLATION FOR INS. ASSO. Then follow the usual provisions of a D. of Sett. The directors may purchase and sell shares. Clause 62 gives the directors power to make regulations as to participation in profits by pol.-holders. Clause 63 relates to settlement of disputes by arbitration. Clause 70 renders the Co. subject to provisions of any General Ins. Act.

Five-sixths of the profits of L. bus. are divided every 7th year among L. pol. of 5 years' duration and upwards. The first division took place in 1843 ; the last in 1871. The bonuses have been progressive—the last being at the rate of £1 7s. p.c. p.a. on sums ins., under rev. scale.

The following particulars are given in the 5th schedule concerning the valuation made as at 13th May, 1871 :

Each pol. was valued separately by finding the value of the sum assu., and deducting therefrom the value of the future net prem., an add. of one quarter year's int. at 3 p.c. being made to the values on account of the claims of the Co. being payable 3 months after proof of death. For short-period assu. a proportion of the prem. payable was stated as the liability. The annu. were also valued separately.

The profits are ascertained every 7 years. Five-sixths thereof belong to the assured, and are divided amongst them by giving to pol. entitled to parti. a bonus at a certain rate p.c. on the sum assu. irrespective of age, for each year's prem. paid since the previous division, if a bonus has already been declared on them ; and if no bonus has been added, then for each year's prem. paid since the commencement of the risk ; a provision being made for the prospective bonus which is payable when death occurs between the periods of dividing profits. The remaining 6th of the profits falls to the proprietors.

The principles of valuation and distribution of profits are determined by the regulations and bye-laws of the directors. The T. of mort. used in the valuation were : (1). *Carlisle* T. for assu. (2). Gov. T. (Finlaison) for annu. on single lives. (3). *Carlisle* T. for special annu. The rates of int. assumed were 3 p.c. on L. pol ; 4 p.c. on annu. The whole of the loading was reserved for future expenses and profits. The amount of profit ascertained was £73,239. The number of pol. participating was 1747, ins. £721,578. The total number of L. pol. in force was 3818, ins. £1,509,240. Annu. contracts, 62, involving ann. payments amounting to £1733. The amount of L. funds in hand, £398,011. The annu. fund, £20,766 ; together, £418,777. F. fund in hand, including cap. and subject to div., £146,962.

The Co. is under sound and economic management. Its Man. and Act. is Mr. John Moinet ; its Sec., Mr. G. H. Fairburn ; its Assistant Act., Mr. D. J. Surene. It has branches in Lond., Dublin, and Glasgow.

CALEDONIAN PLATE-GLASS INS. CO., founded in Glasgow, in 1871, under the Cos. Acts 1862 and 1867, without lim. liability. The authorized cap. of the Co. is £20,000, in shares of £ . Mr. W. M'Gavin M'Culloch was the founder, and is the Manager. The prospectus says :

The object of this Co. is to develop in Scotland the system of plate-glass ins. In the principal cities in England this branch of ins. bus. is daily increasing in importance ; and during the last few years the use of plate-glass for the windows both of shops and dwelling-houses has been exceedingly rapid in Scotland ; and the necessity for security against the risk of serious loss to which proprietors and tenants are thus exposed has been often felt and expressed.

CALENBERG WIDOWS FUND, estab. in 1767 by the States of the Duchy of *Calenberg*, of which Hanover is the cap. It avoided some of the errors of other inst. of the same period, and charged contributions in regard to the age of its members on admission. Its terms, however, were only about one-half the sum actually required to make certain the payment of the allowances promised. In 1779 it had no less than 3800 members or subs., whose widows would become entitled to annu. It had also at that date 600 widows to whom annu. were payable. The large number of members were mainly owing to the lowness of the subs., and the authority of the States. Dr. Price drew attention to the prob. distress and disappointment its failure would occasion. We believe his words of warning led to an investigation of the affairs of the asso. by Prof. Nicholas Tetens, of Kiel, of whom we shall have to speak hereafter.

CALENDAR MONTH.—A period of time consisting of the days assigned to each month in the calendar, and therefore variable ; and also running from a given date in any one month to a corresponding date in the succeeding month—as distinguished from the month of 4 weeks, or 28 days.

CALENTURE (from *caleo*, to be hot).—A violent fever, attended with delirium, incident to persons in hot countries. Under its influence, it is said, sailors imagine the sea to be green fields, and will throw themselves into it, if not restrained.

In the earlier English Bills of Mort. this appeared as one of the causes of death. Thus there are 3 such cases in 1657; and 3 in 1673; 1 in 1681; and 1 in 1708. This is a disease, say the books, in the form of *nostalgia*, the *maladie du pays*, or longing for home: a malady capable of producing death among the enthusiastic inhabitants of mountainous countries. Calenture does not appear in the modern bills.

CALIFORNIA, INS. LAWS OF STATE OF.—There are several laws in force for regulating the formation of Home Ins. Asso. in this State; and also other Acts for regulating the admission of Foreign Ins. Asso. to transact bus. It will be sufficient that we give a short epitome of the general requirements. No asso. can be formed or admitted with a less cap. than \$100,000 held or deposited within the State. Before commencing bus. a certificate from the Ins. Commissioner must be obtained—fee \$30. Agent must give bonds for \$2000; and be authorized to accept service. The cost of the licence is \$400 p.a., payable quarterly. A tax of 2 p.c. is ann. payable on prems. and stamp tax on pol. A statement [*on gold basis*] is to be made to 31st Dec. each year; and certain fees are to be payable with same. Expenses of ins. department beyond fees to be paid by offices *pro rata*. Penalty of \$3000 in default. Some of the cos. of the Eastern States have transacted a very large bus. in California. We shall speak of the mort. of California under UNITED STATES. The standard for valuation of L. contracts in the ins. department is *American Experience T.* 4½ p.c. int. The legal rates of int. in the State are 7 and 10 p.c. according to the nature of the security.

CALISTHENIC (properly *kalisthenic*, from the Greek, signifying *beautiful* and *strength*).—Another term for “gymnastic,” as applied to bodily exercise practised for the improvement of health and strength; but preferable as suggestive of beauty and strength.

CALLET, MONS. F., pub. in Paris, in 1794, *Tables portatives de Logarithms de nombres 1 à 108,000*; revues par M. Saigey. A new ed. pub. 1864.

CALLINGHAM, JAMES, one of the Editors and Proprietors of the *Ins. Record*.—Mr. Callingham renders essential service to the ins. profession by means of his rapid and accurate rendering of reports of discussions on the various papers read before the Inst. of Act.

CALLOW, JOHN, was for some years Chief Clerk in the *European* (No. 2). He pub., in 1865, *A Letter to the Shareholders and Policy-Holders of the European Assu. So. on the Subject of its Recent Amalg. with the Brit. Nation Life Assu. Asso.*; wherein he indicated with great sagacity the probable effect of that proceeding upon the *European So.*

CAMBIO MARINO.—A name used in Sweden, and prob. other parts of the North of Europe, for loans on *Respondentia*, or lending money at maritime int.

CAMBRIAN ASSURANCE CO.—This Co. was projected in 1844; but never got beyond prov. regis.

CAMBRIAN AND GENERAL LIFE INS. CO.—A co. under this title was projected in 1845; but did not proceed beyond prov. regis. It proposed to transact the following branches of bus., viz. fire, hail-storm, life, and cattle.

CAMBRIAN MUT. LIFE ASSU. AND PROV. INSTITUTION.—A co. under this title was projected in 1846, the promoter being Mr. Osmond Lewis. It was never completely regis.

CAMBRIAN AND UNIVERSAL INS. CO., founded in 1849, with an authorized cap. of £100,000, in 4000 shares of £25. For “L and F. ins., healthy, invalid, and declined lives assured; marriage dowries and annu. granted,” etc., etc. The prosp. said:

Of all asso. calculated to promote the welfare of society none advance higher claims to public support, or stand in a more conspicuous and honourable position than life assu. inst., the benefits of which, though applicable to all classes, are nevertheless not universally diffused among any. However, it is trusted that the period is rapidly approaching when *not* to ins. will be the exception instead of the rule; and when life ins. will be generally resorted to as affording the wisest, easiest, and best means of shielding families and dependents from the poverty, sorrow, and temptation, which a premature death entails so frequently. . . .

Nothing can be more simple or easy than to effect such an ins.; but nevertheless, as scarcely 200,000 persons are ins. out of 30,000,000, it is highly prob. that these remarks will fall into the hands of many persons altogether ignorant of the course to be adopted, and who may imagine the process intricate and difficult. . . .

The Co. issued endowment pol.; half credit; increasing and decreasing rates; limited number of payments; joint lives; declined or invalid lives; and whole-world pol. But its new and important feature, “entirely originating with this Co.,” was a scheme of “marriage dowries, life assu. and deferred annu. embraced by one pol.”:

It is applicable to both sexes; but by its adoption the two most eventful periods of female life especially are provided for. At a very moderate sacrifice every person having children or dependents is, according to station in life, enabled to secure to them their position in society. *Example:* A person having a daughter (or son) aged 4 years next birthday, may by one payment of £218 2s. 11d., or by an ann. payment of £17 10s., continued only till 21, in case the child should live so long, secure to that daughter £500, payable within 1 month after arrival at 21, should she be previously married; or if marrying after 21, then within 1 month of proof of that event. In case of her non-marriage at 41, she will then be entitled to an annu. of £75, payable half yearly, for the remainder of her life. In the event of her dying unmarried before 21, three-fourths of the prems. paid will be returned to the father or his personal representatives; while in case of the death of the child unmarried between 21

and 41, the above-mentioned sum of £500 will become payable to her representatives. In add. she may at any period after 21, if unmarried, sell to, or raise money from this Co. upon the pol. proportionate to its actual value. By this mode assu. can be virtually effected on the lives of many young persons, who, from a tendency to consumption, delicate constitution, or other serious cause, would be otherwise uninsurable.

The F. bus. was very small, as will be seen by reference to the FIRE DUTY returns hereafter given. The Man. and Sec. of the Co. was Henry Felton; the Assistant Fire Man., John Henry Kock; the Consulting Act., W. E. Hillman. In 1857 the L. bus., which had never been large, was trans. to the *Mitre*.

CAMPBELL, ROBERT, M.A., Advocate, Edinburgh. He pub. in the *Philosophical Mag.*, for Nov., 1859, a paper, *On a Test for ascertaining whether an Observed Degree of Uniformity or the Reverse in Tables of Statistics is to be looked upon as remarkable*. In 1860 he contributed to the *Assu. Mag.* a paper, *On the Composition for Leave to an Assured to Reside Abroad*. In the same year he submitted to the Inst. of Act. a paper, *On the Stability of the Results based upon Average Calculations considered with Reference to the Number of Transactions embraced*. These papers will be found in vols. viii. and ix. of *Assu. Mag.* They are ably written. We notice them under the respective subjects which they treat. [AVERAGES.] [FOREIGN RESIDENCE.] [STATISTICAL RESULTS.]

CAMPBELL, T. COLIN, was Sec. *pro tem.* of *Colonial Foreign and General*, 1845.

CAMPBELL, WILLIAM, Comptroller of the Legacy Duty, pub., in 1810, *The Value of Annu. from £1 to £1000 p.a. on Single Lives from the Age of 1 to 90 Years; with the Number of Years' Purchase each Annu. is worth, and the Rate of Int. the Purchaser receives. With the Amount of the several Rates of the Legacy Duty, Payable according to the Statute on the Value of Annu.* [ANNU. ON LIVES.]

CAMPBELL'S ACT.—An Act of Parl. passed in 1846, at the instance of the late Lord Campbell, 9 & 10 Vict. c. 93, *An Act for Compensating the Families of Persons Killed by Accidents*. The Act was amended in 1864. [INJURY.] [NEGLIGENCE.]

CAMPHENE.—Rectified oil of turpentine is sold in the shops under this name for burning in lamps. It is very inflammable, burning with a bright white flame, and without a proper supply of air it evolves a dense smoke; hence peculiar lamps (*camphene lamps*) are required.—*Dr. Ure*.

In certain classes of fire risks the use of camphene is considered highly dangerous. In the case of *Westfal v. Hudson River Fire Ins. Co.*, tried in N.Y. in 1855, the policy under "Specially Hazardous" contained this clause: "Camphene, spirit gas, or burning fluid, when used in stores or warehouses as a light, subjects the goods therein to an extra charge of 10 cents. per \$100, and prem. for such use must be indorsed on pol.;" and it appearing that camphene had been used in the store ins. up to the time of the fire, without permission or payment of extra charge, it was *Held*, that the use of it was prohibited, and that the pol. was void. In the case of *Harper v. City Ins. Co.*, tried in N.Y. in 1857, where a condition in the pol. provided that "this Co. will not be liable for any loss occasioned by camphene or other inflammable liquid," it was *Held* to mean, not that the fire must originate with the camphene, by its own ignition, but as a medium of communication from outside or other cause, thus occasioning a fire which would not have happened but for the presence of that article on the premises. And in the case of *Stettiner v. Granite Ins. Co.*, tried in N.Y. in 1858, where a clause in pol. of ins. on "stock of cap fronts and other goods," provided that "lighting the premises ins. by camphene or spirit gas, without written permission in the pol., shall render it void," it was *Held* to apply to ins. on merchandize as well as on buildings, and to be binding on insured.—*Digest of Fire Ins. Decisions*.

CAMROUX, F. FERGUSON, was first Sec. of *National Loan Fund*, 1837. In 1848 he became Sec. of *Metropolitan Counties*, and remained in that position until the amalg. of the Co. in 1862. He has not since returned to ins. pursuits.

CANADA.—The Province of Canada constitutes an important part of Brit. North America. It formerly consisted of two provinces, viz. Upper and Lower Canada. These and the adjacent provinces of New Brunswick and Nova Scotia are since 1867 united. Returns before this date will not apply to the United Provinces. Canada was first taken by the English in 1628; but it has several times had to be retaken. The French element is still strongly marked in the pop. of Lower Canada—that is, below Montreal on the St. Lawrence river.

If latitude alone determined the temperature of the atmosphere, the climate of Canada would resemble that of central and S. Europe; but through the operation of numerous disturbing influences by which temperature is affected, it more nearly resembles the climates of Norway, Sweden, St. Petersburg, and the S. portions of Iceland—the isothermal line diverging far to the north of the parallels of latitude that connect it with the old continent. Both the heat of summer and the cold of winter are much greater than in the corresponding latitudes of Europe—the thermometer ranging between 102° above, and 36° below the zero of Fah.; but in the districts adjoining the great lakes on its S. border, the climate is much milder than that of places more remote—a natural consequence of the presence of great expanses of water. The prevailing winds in Canada are the N.E., N.W., and S.W., the last being the most frequent.—*Imperial Gazetteer*.

The towns and villages were originally constructed nearly entirely of wood, as were the paths in the streets, and not unfrequently the roads. In the towns this state of things is now rapidly changing; and the buildings and warehouses used for the purposes of commerce are equal in solidity and safety of construction with those of any part of Europe.

The pop. of Canada has increased very rapidly; the immigration being large and incessant. A great many of the immigrants pass at once into the back country for the purposes of agricultural settlement. In 1857 the pop. of Lower Canada was 1,220,514; and of Upper Canada 1,350,923: together 2,571,437. In 1861 it was estimated at 3,000,000, and Dr. Farr estimated the excess of males over females at about 70,000. The census of 1871 shows that there had been an increase on the pop. of 1861 of 395,265, or 12.79 p.c. The total pop. of the four provinces is placed at 3,484,924; but it seems to be admitted that the figures are much below the mark. However that may be, the actual returns are as follows:

Ontario—		New Brunswick—	
Population in 1871.....	1,620,842	Population in 1871.....	285,777
Increase since 1861.....	224,751	Increase since 1861.....	33,730
Rate of increase.....	16.9	Rate of Increase.....	13.38
Quebec—		Nova Scotia—	
Population in 1871.....	1,190,505	Population in 1871.....	387,800
Increase since 1861.....	79,841	Increase since 1861.....	56,943
Rate of increase.....	7.18	Rate of increase.....	17.2

The pop. of Prince Edward Island was 93,521, against 80,357 in 1861, an increase of 13,164, or 16.28 p.c. There had been no returns from British Columbia, but the last estimate of its pop. was 10,496, exclusive of natives. The Indian pop. is variously estimated at from 30,000 to 50,000, and the Chinese number 1947.

In a paper in the *Journ. of Statistical So.*, 1849, by Mr. J. T. Dawson, *Some Particulars of the Commercial Progress of the Colonial Dependencies of the U. K. during the 20 Years 1827-46*, will be found some other details as to the pop. of the provinces.

Fire Ins.—For many years several of the Brit. F. ins. offices have had agencies in Canada. Since 1860 the number has very considerably increased. Many of the young English offices have tried their hands here with very poor success. About 1855 or 1856 the Brit. offices then having agencies in Canada, on comparing notes, found almost without exception that their bus. had involved a loss. A gentleman was sent out to investigate the cause and suggest a remedy. Combined action and increased rates followed for a time; but after a few years competition became as rife as ever. Combined action is impossible among agents located so far distant from the seat of management of their cos. Then the inducement of a commission will always lead to the acceptance of some unprofitable risks—unprofitable for the office. The difficulty of efficient supervision of the risks accepted is very great; but it has to be solved before F. ins. in Canada can become profitable.

The competition of the American offices has from time to time presented further difficulties. That is now in a great measure removed. We are glad to see that the subject of rates is again [August, 1872] receiving some attention.

The local Canadian offices have never been very powerful; they are of two classes—joint-stock and mutual—the latter mostly very small. It is only as recently as 1868 that any accurate compilation of the aggregate statistics of F. ins. in Canada has been made. Here are the figures:

	Dollars.		Dollars.
Premiums paid during the year.....	1,992,602	Number of losses of the year	1715
Number of new and renewal pol.....	76,882	Amount of losses paid in the year	1,095,494
Amount of new pol. of the year	129,844,331	Losses in suspense.....	65,178
Total amount at risk, Dec. 31st	203,653,894	Losses resisted	61,484

Of this the local mut. offices are believed to have taken in prems. about \$170,000; to have issued 20,000 pol. ins. \$14,500,000 [pol. generally running 3 years]; to have \$36,000,000 at risk; to have sustained 150 losses, and to have paid thereon \$110,000, in add. to \$5000 in suspense, and \$14,000 resisted.

Regarding the prems. received in Canada by each of the Brit. offices, we have no later return than 1869. We give also, for purposes of comparison, the figures of 1868:

	1869.	1868.
Liverpool, London, and Globe ...	\$286,398	—
Royal	241,683	237,810
North British and M.	144,822	129,715
Queen	94,048	—
Phoenix	86,081	84,562
Commercial Union	81,890	71,067
Imperial... ..	64,522	57,600
Lond. Assu. Corp.	55,931	52,234
Lancashire	40,487	49,835
Northern	18,115	11,838
Scottish Provincial	9489	10,000
Scottish Imperial	4878	—

Life Ins.—Prior to 1847 but little L. ins. bus. had been transacted in Canada. The *National Loan Fund* of England was almost the only Co. in the field. In 1847 the *Canada L.* was founded at Hamilton. In the same year the *Colonial* of Edin. founded a branch in Canada. For several years the two last-named offices transacted nearly all the bus. of this class in the province; but the total was very small. Mr. Geo. Sheppard, Act. of *Canada L.*, pub., in 1855, *Canada, Life Assu. in.* He spoke of the future rather than the past. Year by year new competitors entered the field, chiefly Brit. offices; and by means of continuous competition, they in the end made the advantages of L. ins. understood. About 1866, several of the *American* offices commenced operations in the province; and they infused into the bus. an amount of enterprise which it had never before experienced. In this year (1866) was passed the law requiring deposits and annual returns. At the end of 1867 an estimate was made from the returns of the offices of the amount of L. ins. in force. It was found to be about \$20,000,000; yielding in ann. prems. \$700,000. Of this bus. the *Canada L.* held about \$4,500,000; the *Standard* (including *Colonial*) about \$4,000,000; the *Ætna* (U.S.) about \$1,500,000; the remainder was divided amongst the other Brit. and American offices.

The following summary of Life bus. is from the latest returns—1871. The nationality of some of the offices will be made clear by reference to a table at the end of this art.

Name of Company.	Premiums of the year.	No. of Policies (new).	Amount of Policies (new).	Amount at risk.
	\$		\$	\$
Canada ..	277,922	1529	2,221,944	8,309,110
Ætna.....	198,741	1054	1,813,350	5,297,658
Standard	131,124	318	503,330	4,449,427
Connecticut	163,434	776	1,563,456	3,935,919
Life Association	129,828	327	432,982	3,927,272
Atlantic	52,620	497	946,250	2,123,050
Union	82,303	278	441,400	1,909,150
Phoenix Mutual	82,652	700	1,262,591	1,842,176
Equitable	47,028	327	782,100	1,622,100
Scottish Provincial	64,322	35	68,486	1,605,358
New York	57,175	429	810,300	1,364,300
Royal ..	33,365	23	45,103	1,361,471
North British	31,209	31	59,846	1,110,167
Edinburgh	25,348	39	63,862	862,674
National	17,487	440	741,000	804,000
Commercial Union	21,221	60	105,363	782,487
Star	12,877	16	18,736	481,843
Scottish Amicable	12,124	30	41,366	446,718
Queen	11,463	26	33,566	394,080
Scottish Provident	7,897	27	51,708	273,677
Liverpool, London, and Globe...	7,597	29	34,000	249,760
Reliance Mutual	4,981	106	168,675	209,000
Travellers	27,735	318	562,300	Unknown.
Briton Medical.....	} No return received.	...	...	...
London and Lancashire .....		...	...	...

These figures show that the sums ins. have increased from \$20,000,000 in 1867 to \$43,361,397 in 1871; and the yearly prems. from \$700,000, to \$1,500,453. In 1868, the total amount of the pol. which became claims by death was \$150,000. In 1870 it amounted to over 400,000 dollars.

It does not appear to be considered that the field for L. bus. in Canada is yet exhausted. During 1871 three new cos. were set on foot, viz. the *San*, Montreal; the *Confederation*, Toronto; the *Mutual*, Toronto. The first of these offices pub. its report for seven months, closing with the year, and showing a very satisfactory bus.

The *Citizens' Assu. Co.* of Montreal has been for some years in existence transacting L., F., fid. guarantee, and accident bus. It would be satisfactory to see its progress in the two last-named departments, but it does not pub. any returns. The *Waterloo Mut. L.* of Montreal, which has been several years in existence, is not included in the returns here given. During the present year there has been founded the *Life Association of Canada*, under progressive management.

Inland Marine Ins.—This branch of bus., which applies to ins. of goods on canals, rivers, and lakes, with which the province abounds, is carried on to a large extent. Five cos. are licensed to transact it; but it is said that some American cos. carry it on without licence. If any portion of the voyage is in salt water—as say from Halifax to Chicago—it is held to be ocean or ordinary marine ins. The goods must not be transhipped *en route*, or the nature of the risk changed.

Marine Ins.—We have no details concerning marine ins. cos. in Canada, or the extent of their bus. Such cos. require no licence here, and make no returns.

Vital Statistics.—Regarding the vital statistics of Canada, there is not much to be said. It is a new country, or more correctly a country in which the changes in the pop. are very rapid, by means of immigration and other causes; yet the subject is engaging some attention. Dr. Carpenter has pub. three Essays on the V. Sta. of Montreal, the first as far back as 1859; the latter as recently as 1867 and 1869. The statements are for the most part too sweeping to inspire entire confidence. We hope the *Year-Book of Canada* will become the medium for accumulated and accurate details. A careful study of such materials as have fallen into our hands leads us to believe that human life *ought* to be of longer average duration in Canada than in Europe. To attain to this there is one evil to overcome, and that is *excessive drinking*.

In a few years we may obtain from Canada that best of all tests for L. ins.—*the experience of the mort. of insured life*. So far as we can apply that test now, the results appear favourable. The *Canada L.* has been in operation about 25 years. Its bus. has been confined exclusively to lives resident in Canada. *Its claims by death have been considerably under the mort. indicated by the CARLISLE T., on which its operations are based.* But then it has the full benefit of local knowledge in its selection of lives. We observe that this Co., at its last quinquennial investigation (1870), declared a rev. bonus of 2½ p.c. p.a. The high rate of int. at which investments may be made in the province will have aided in this result; but sound and economic management, including careful selection, will have done as much or more.

Legislation.—Several special laws have been enacted affecting ins. asso. On the 19th May, 1860, a law was passed for regulating ins. offices not incorp. by any statute of the province; requiring that the ann. statements of such cos. should be made to the Minister of Finance in the month of January, for the year ending on the preceding 1st July. As this Act is now superseded, we need not dwell upon its provisions.

On the 18th Sept., 1865, the following wise and beneficent measure became law—29 Vict. c. 17:

Whereas it is expedient to permit persons to ins. their lives for the benefit of their wives and children. Therefore, Her Majesty, by and with the advice and consent of the Legislative Council and Assembly of Canada, enacts as follows: 1. It shall be lawful for any person to ins. his life for the whole term thereof, or for any definite period, for the benefit of his wife and children, or of his wife and some or one of them, and to apportion the amount of the ins. money as he may deem proper, where the ins. is effected for the benefit of more than one. 2. The said ins. may be effected either in the name of the person whose life is insured, or in the name of his wife, or of any other person (with the consent of such other person) as trustee; and the prem. on any pol. of ins. hereafter effected under this Act shall be payable during the whole of the said person's life, or during any lesser period, by ann., half-yearly, quarterly, or monthly payments. 3. It shall be lawful, within one year after the passing of this Act, for any person, by writing indorsed upon or attached to any pol. of ins. on his life which may have been effected and issued before the passing of this Act, to declare that such pol. and ins. shall be for the benefit of his wife, or for his wife and children, or of his wife or some or one of his children, or of his children only, or some or one of them, and to apportion the amount of the ins. money as he may deem proper, when the ins. is declared to be for the benefit of more than one. 4. When no apportionment is made in any pol. or declaration as aforesaid, all parties interested in the said ins. shall be held to share equally in the same, and when it is stated in such pol. or declaration that the ins. is for the benefit of the wife and children generally, without specifying their names, then the word 'children' shall be held to mean all the children of the person whose life is insured, living at the time of his death, whether by any other marriage or not. 5. Upon the death of a person whose life is insured, the ins. money due upon the pol. shall be payable according to the terms of the pol., or the declaration aforesaid, as the case may be, free from the claims of any creditor or creditors whomsoever. 6. Nothing contained in this Act shall be held or construed to restrict or interfere with the right of any person to effect or assign a pol. for the benefit of his wife or children as at present allowed by law, nor shall it affect any assignment of any existing pol. made before the passing of this Act, nor any action or proceeding pending at the time of the passing of this Act in any court of law or equity.

This Act was amended in 1869, to the following effect:—Ins. moneys due to minors may be paid to executors of the insured. If insured die intestate without nomination, money may be paid to guardian of minor. Guardians may invest such moneys. Policy may be surrendered for paid-up pol. Or the pol. may be borrowed upon. In case of death of any one of several nominees, survivors to take share. Profits may be applied to reduce prems. or increase ins. [see 1872]. [NOMINATION POLICIES.]

On the 1st August, 1868, there came into operation, "An Act respecting Ins. Cos."—31 Vict. c. 48 [Canadian Parl.], which contained the following provisions: Sec. 2, no co. transacting other than ocean marine ins. business

To issue any pol. of ins., or take any risk, or receive any prem., or transact any bus. of ins. in Canada, or prosecute or maintain any suit, action, or proceeding, either at law or in equity, or to file any claim in insolvency, *without first obtaining a licence from the Minister of Finance to carry on business in Canada*; but the prems. to become due on pol. actually issued previous to this date may continue to be received, and the losses arising thereon may be paid as if this Act had not been passed.

3. The Minister of Finance to grant licence as soon as required deposits are made.

4. The deposit to be so made as aforesaid shall be as follows, to wit: by every L., F., inland marine, guarantee, or accident ins. co., a sum of not less than 50,000 dollars, and such sum shall be deposited before the licence is issued, except only in the case of cos. incorp. before the passing of this Act, by Act of the Parl. of Canada, or of the legislature of any of the late provinces of Canada, Lower Canada or Upper Canada, or of Nova Scotia or New Brunswick, or which may have been or may hereafter be incorp. by the Parl. of Canada or by the legislature of any province of the Dominion, and carrying on the bus. of L. or F. ins., or of inland marine ins., or both the latter, but no other, which

cos. may make such deposit in *three equal ann. instalments*, the first of which shall be paid before the issue of the licence, on or before the first day of August, 1869.

5. When any co. carries on more than one description of ins. bus., it shall make a separate deposit as aforesaid, for each branch of its bus.: Provided that a co. combining L. and accident ins. or F. and inland marine ins. shall only be required to make one deposit for each such combination of two branches of bus., and with respect to any ins. bus. other than those hereinbefore specified, the Minister of Finance may prescribe the amount of deposit which shall be required.

6. Except only as regards cos. entitled to make their deposits by instalments as aforesaid, whenever and so long as the deposit of any co., under this Act, shall be less than 100,000 dollars, the agent of such co. shall send in yearly to the Minister of Finance, within one month after the first day of January of each year, returns under oath, of the amount of prems. received by the co. on risks in Canada, and after deducting 25 p.c. therefrom, and the net amount of losses or claims actually paid, shall deposit in the hands of the Receiver-General for the purposes of this Act, and subject to its provisions, the balance of such prems., until the deposit of such co. shall be equal to 100,000 dollars; and so long as such deposit is under 100,000 dollars, no int. or div. shall be paid on the actual deposit, but such int. or div. shall be added to the principal every half year until, with the prems. hereinbefore mentioned, the deposit shall amount to 100,000 dollars: Provided, that any co. combining the bus. of F. and L. ins. shall be required to make such additional deposit only as regards the prems. received for L. ins.: and provided also that any L. ins. co. incorp. in Canada since the Union which shall deposit all the balance of the prems. received by it, after the deductions above provided for, until such deposit amounts to 100,000 dollars, and that any F. ins. co., so incorp., which shall deposit all its receipts from payments on its shares, and the balance of prems. as aforesaid, shall not be subject to any provision of this Act requiring any other deposit.

7. It shall be the duty of the Receiver-General forthwith to invest the amount of any such deposit made in cash, in Canada Dominion Stock, in trust for the co. making such deposit, for the purposes of this Act; and except as hereinafter provided, in case of the insolvency of the co., such stock or the amount of such deposit, shall not be lessened, disposed of or surrendered to the co. without the order of the Governor in Council.

8. Except in the cases with respect to which it is otherwise provided, so long as the amount of the deposit which any co. is required to have then made is unimpaired, and no notice of any judgment or order to the contrary is served upon the Minister of Finance and the Receiver-General, the int. upon the stock or securities representing or forming part of such deposit shall be payable to the co.

9. Every co. obtaining such licence as aforesaid shall, before the transaction of any bus. of ins., file in the office of either of the Superior Courts of Law or Equity in that one of the provinces of Ontario, Nova Scotia, or New Brunswick, in which it has its chief agency (if such chief agency be in one of those provinces), or if the chief agency be in the province of Quebec, with the Prothonotary of the Superior Court of the district wherein such chief agency is estab., a certified copy of the charter, act of incorp. or articles of asso. of the co., and also a power of attorney from the co. to its agent in Canada, under the seal of the co. (if it have a seal), and signed by the President and Secretary or other proper officer thereof, and verified as to its authenticity by the oath of the agent of such co. in Canada, or of some person cognizant of the facts necessary to its verification, which power of attorney must declare at what place in Canada the chief agency of the co. is, or is to be, estab., and must expressly authorize such agent to receive process in all suits and proceedings against such co. in Canada, for any liabilities incurred by the co. therein, and must declare that service of process for or in respect of such liabilities, at such chief agency or personally on such agent, at the place where such chief agency is estab., shall be legal and binding on the co. to all intents and purposes whatever.

By sec. 10, service of process on cos. according to such documents to be valid.

11. Every co. obtaining such licence to give notice thereof in *Canada Gazette*, and in at least one newspaper in the county city or place where the chief agency is estab., and continue same for a space of one calendar month; and like notice shall be given that they intend to cease to carry on bus. in Canada.

12. No Foreign Stock Co. shall transact any bus. of ins. in Canada, unless such co. is possessed of at least 100,000 dols. of paid-up and unimpaired cap., or accumulated surplus funds invested in good and sufficient securities; nor shall any licence be issued in favour of such co. until a statement under oath to that effect is filed with the Minister of Finance, sworn to by some one whose duty it is to know, and who is personally cognizant of the fact sworn to; provided that the unimpaired amount of the deposit of any co. then in the hands of the Receiver-Gen. shall be reckoned as part of its cap.

13. Any person who shall deliver any pol. of ins., or collect any prem., or transact any bus. of ins. on behalf of any such co. as aforesaid, without such licence as aforesaid, or if such licence has been withdrawn, without the renewal thereof, or without filing the copy of the charter, act of incorp., or art. of asso. of the co., and a power of attorney as hereinbefore provided, shall be liable to a penalty of 1000 dols. for each such contravention of this Act, which penalty may be sued for, etc.

In case of non-payment, person so offending to be liable to 3 months' imprisonment.

Sec. 14 requires ann. statements to be transmitted to the Minister of Finance, made up to 1st July preceding in the forms given in the schedule of the Act. The Finance Minister to cause an analysis to be laid before Parl. F. Minister to prescribe form of schedule in cases not provided for. Sec. 15 makes an exception in favour of certain cos. in the U. K., which were not bound by the laws then in force to furnish or pub. statements of its affairs. But such cos., if F. only, to deposit 100,000 dols., or if L., or F. and L., 150,000 dols., and fill up form in Schedule D. of Act. Sec. 16 directs application of deposit to pay claims in case of insolvency of co. A co. to be deemed insolvent,

Upon failure to pay any undisputed claim arising or loss insured against in Canada for the space of 30 days after being due; or, if disputed, after final judgment and tender of a legal valid discharge, and (in either case) after notice thereof to the M. of Finance. . . . Provided that in any case when a claim for loss is, by the terms of the pol., payable on proof of such loss, without any stipulated delay, the notice to the M. of Finance under this sec. shall not be given until after the lapse of 60 days from the time when the claim becomes due.

Distribution to be made under direction of Superior Court within the district where the chief agency is situated. 17. Order of Court as to transfer of stock. By sec. 18, whenever any co. entitled to make the deposits required by instalments, fails to pay any instalment when due, or to pay over bal. of prems., licence to be withdrawn; but may be renewed in certain cases specified.

19. After any co. has ceased to transact bus. in Canada, and given the notice required by this Act to that effect, it shall be lawful for the Governor in Council, on the report of the Treasury Board, to authorize the whole or any portion of the stock or other securities so held in deposit for any co. as aforesaid, to be released and transferred to the co. upon being satisfied *that it has no liabilities upon pol. issued in Canada, and that no suit or legal proceedings are pending against the co. therein*, or on proper proof on oath of the state of its affairs being given, that such co. has ample assets to meet all its liabilities; and upon such authority being given by the Governor in Council, the co. shall be entitled to receive, instead of any Dominion Stock so held, the amount thereof in money at par.

Sec. 20 enacts that mut. F. ins. cos. having their head office in any part of Canada shall regis. their names with the M. of Finance, and make ann. returns in such form as may be prescribed by him. 21 deals with local cos. in the provinces of Ontario and Quebec licensed under former Acts.

22. And as regards British and other foreign ins. cos. actually doing business in Canada at the time of the passing of this Act, which cannot by the terms of their constitutions or charters, or by law, invest in Canadian securities, it shall be lawful for the M. of Finance, with the approval of the Governor in Council, to receive the amount of the deposit required of them under this Act, in British or foreign Gov. securities, including stock of any one or more of the United States, at their then market value, but with power to him to require from time to time, if such market value should decline, additional security equivalent to their diminution in value;—and the portion of the prems. received by any such co. required to be deposited under this Act may be invested by the co. in any such British or foreign stock as aforesaid, and such stock may be deposited with the Receiver-General, subject to the provisions above made as to value, and diminution in value;—but all such stock shall be replaced by cash or investment to the amount aforesaid within three years from the issue of the licence to the co., otherwise such licence shall be void. And as regards any such co. acting on the mutual principle in such wise as to be unable legally to make a deposit under this Act, for the security of pol.-holders resident in Canada the deposit may be for the general benefit of all its members, but the co. shall specify the fact when making the deposit and in all returns made or pub. by them.

Sec. 23 provides that list of licensed cos. be pub. quarterly. Sec. 24 repeals former Acts from commencement of this Act.

25. The provisions of this Act as to deposit and issue of licence shall not apply to any ins. co. incorp. by any Act of the Legislature of the late province of Canada if incorp., or to be incorp. under any Act of any one of the provinces of Ontario, Quebec, Nova Scotia or New Brunswick, so long as it shall not carry on bus. in the Dominion beyond the limits of that province by the Legislature or Gov. of which it was incorp., *but it shall be lawful for any such co. to avail itself of the provisions of this Act.*

Then follow the Schedules :

FORM A.—*Statement to be made by every L. or accident ins. co., except cos. mentioned in sec. 15.—(Name of the co.)* Assets of the co.; liabilities of the co.; amount of cap. stock; amount paid thereon; of what the assets of the co. consist, viz. (*insert particulars*); total prems. received during the year; number and amount of pol. issued during the year; amount of claims from death (or accident) during the year; expenses of management, agency, etc.; total prems. received during the year in Canada; number and amount of pol. issued during the year in Canada; amount at risk on total pol. issued in Canada; number and amount of pol. that have become claims in Canada during the year by death (or accident).

FORM B.—*Statement to be made by a F. or guar. ins. co., whose deposits are not less than 100,000 dols. (except cos. mentioned in sec. 15), referred in sec. 4.—*Assets of the co.; liabilities of the co.; amount of cap. stock; amount paid thereon; of what the assets of the co. consist, viz. (*insert particulars*); amount of losses paid during the year; amount of losses due and unpaid; losses adjusted and not due; losses in suspense and waiting further proof; losses, the payment of which is resisted, and for what cause; all other claims against the co.; amount of prems. earned for the past year; amount of prems. unearned for the past year; number and amount of pol. issued during the year; amount at risk on total policies in force in Canada; losses in Canada paid during the year; ditto adjusted and not due; ditto in suspense and waiting for further proof; ditto the payment of which is resisted and for what cause; all other claims against the co.; premiums earned in Canada during the year; ditto unearned in Canada during the year.

FORM C.—*Statement to be made by a F. or guar. ins. co. whose deposits are under 100,000 dols., except those referred to in sec. 4.—*Amount of prems. received during the year on risks effected in Canada, less 25 p.c., and the net amount of losses actually paid; deposit in conformity with the 2nd sec. of the said Act; assets of the co.; liabilities of the co.; amount of cap. stock; amount paid thereon; of what the assets of the co. consist, viz. (*insert particulars*); amount of losses paid during the year; amount of losses due and unpaid; losses adjusted and not due; losses in suspense and waiting for further proof; losses, the payment of which is resisted, and for what cause; all other claims against the co.; amount of prems. earned during the past year; amount of prems. unearned; amount at risk on total policies in force in Canada; losses in Canada paid during the year; losses in Canada adjusted and not due; losses in suspense and waiting for further proof; losses, the payment of which is resisted, and for what cause; all other claims against the co.; prems. earned in Canada during the year; prems. unearned in Canada during the year.

FORM D.—*Statement to be made by an ins. co. referred to in sec. 15.—*Total prems. received during the year in Canada; number and amount of pol. issued during the year in Canada; amount at risk on total pol. in force in Canada; number and amount of pol. that have become claims in Canada during the year; amount of losses in Canada paid during the year; amount of losses in Canada in suspense and waiting further proof; losses in Canada, the payment of which is resisted, and for what cause; amount of prems. earned for the past year in Canada; amount of prems. unearned in Canada.

In the recent session of the Canadian Legislative Assembly (1872), a bill was introduced to extend the rights of property of married women, and therein were contained clauses similar in effect to those contained in our own recent Act. [MARRIED WOMEN.]

There are those who think that ins. legis. has been carried quite far enough for the present in the Dominion—and that it will be wise to pause and perfect, rather than invent. We join in that view.

The following is a list of the principal offices transacting bus. in Canada at the close of 1871, showing their nationality, amount of deposits, etc. Some of the small local offices are not called upon to make any return, and therefore may not be included.

T. OF INS. OFFICES TRANSACTING BUS. IN CANADA UNDER LICENCE, CLOSE OF 1871.

Name of Co.	Nationality of Co.	Nature of bus. Licensed.	Deposit. Dollars.	Name and Location of Chief Agent.
Ætna of Hartford	American.	F., In. Marine	53,000	R. Wood, Montreal.
Ætna of Hartford	American.	Life.	140,000	S. Pedler & Co., Montreal.
Agricultural, Watertown.	American.	Fire.	100,000	H. Cline, Kingston.
Agricultural Mutual	Canadian.	Fire.	25,000	D. C. Macdonald, London.
Andes, Cincinnati	American.	F., Inland Ma.	50,000	F. B. Beddome, London.
Atlantic Mutual, Albany.	American.	Life.	80,000	H. C. Allen, Brantford.
British America	Canadian.	F. & I. Mar.	50,000	T. W. Birchall, Toronto.
Briton Medical	British.	Life.	100,000	J. B. M. Chipman, Montreal.
Canada Life	Canadian.	Life.	50,000	A. G. Ramsay, Hamilton.
Commercial Union	British.	Fire & Life.	150,000	Morland, Watson, & Co., Mon-
Confederation Life	Canadian.	Life.	50,000	W. McCabe, Toronto. [treal.
Connecticut Mut.	American.	Life.	140,000	R. Wood, Montreal.
Edinburgh	British.	Life.	150,000	D. Higgins, Toronto.
Equitable	American.	Life.	100,000	R. W. Gale, Montreal.
Guardian	British.	Fire.	100,000	Simms and Denholm, ditto.
Hartford Fire	American.	Fire.	130,000	R. Wood, Montreal.
Imperial	British.	Fire.	100,000	Rintoul Bros., Montreal.
Isolated Risk	Canadian.	Fire.	50,000	J. Mangham, jun., Toronto.
Lancashire	British.	Fire.	100,000	W. Hobbs, Montreal.
Life Asso. of Scotland ...	British.	Life.	150,000	P. Wardlaw, Montreal.
Liverpool, Lond. & Globe	British.	Fire & Life.	150,000	G. F. C. Smith, Montreal.
London Assurance	British.	Fire & Life.	150,000	R. H. Stevens, Montreal.
London and Lancashire..	British.	Life.	75,000	T. Simpson, Montreal.
Mutual Life	Canadian.	Life.	16,666	W. Power, Toronto.
National Life	American.	Life.	60,000	Livingstone & Co., Toronto.
New York	American.	Life.	100,000	W. Burke, Montreal.
North British & M.	British.	Fire & Life.	150,000	Macdougall & Davidson, do.
Northern	British.	Fire.	100,000	Taylor Bros., ditto.
Phoenix	British.	Fire.	100,000	Gillespie, Moffat, & Co., do.
Phoenix Mutual, Hartford	American.	Life.	130,000	A. R. Betheme, ditto.
Provincial	Canadian.	F. & In. Ma.	24,547	A. Harvey, Toronto.
Quebec Fire	Canadian.	Fire.	100,000	W. L. Fisher, Quebec.
Quebec Fire and Life ...	Canadian.	Fire & Life.	150,000	A. M. Forbes, Montreal.
Reliance Mutual	British.	Life.	100,000	Jas. Grant, ditto.
Royal	British.	Fire & Life.	150,000	H. L. Routh, ditto.
Scottish Amicable	British.	Life.	150,000	J. Nelson, ditto.
Scottish Fire	British.	Fire.	100,000	Oswald Bros., ditto.
Scottish Imperial	British.	Fire.	50,000	H. J. Johnston, ditto.
Scottish Provident	British.	Life.	100,000	Oswald Bros., ditto.
Scottish Provincial	British.	Life.	150,000	G. W. Ford, ditto.
Standard	British.	Life.	150,000	W. M. Ramsay, ditto.
Star	British.	Life.	100,000	A. W. Lauder, Toronto.
Sun Mutual	Canadian.	Life.	50,000	M. H. Gault, Montreal.
Travellers	American.	Life & Accidt.	140,000	T. E. Foster, ditto.
Union Mutual	N. Brunswk	Life.	100,000	B. R. Corwin, St. Johns, N. B.
Western	Canadian.	F. & In. Mar.	50,000	B. Haldane, Toronto.

[Many of the materials upon which the preceding art. is based have been most kindly and thoughtfully supplied to us by Mr. A. G. Ramsay, F.I.A., Man. of *Canada L. Co.*, Hamilton City. We hereby tender him our best thanks.]

CANCELLATION.—An expunging or wiping out of the contents of a document, or legal or business instrument.

CANCELLATION [CANCELMENT] OF POL. OF INS.—The cancellation of a pol. of ins. has a meaning somewhat different from the preceding. It means an absolute and more or less immediate discontinuance of the contract between the office or underwriter and the insured. We say "more or less immediate," because the conditions of each particular contract must be taken into account. Nor does it mean a simple DISCONTINUANCE of the risk. This latter can only take effect on the arrival of an ordinary period of renewal. A *cancelment*, in the sense here intended, can only follow *some act or occurrence by which the nature of the risk has become changed without the sanction of the office, or of the individual underwriter*. It implies a FORFEITURE, with some modification of the consequences flowing therefrom, viz. to the extent that in a Cancelment a proportion of the unearned prem. is usually returned by agreement between the parties. It will be convenient to look at the subject under each branch of Ins. to which it may apply.

Marine Policies.—There appears to have been a custom in Marine Ins. to cancel pol.

in certain events : more particularly in the case of change of ownership of the subject-matter insured. Arnould lays it down that the rescission of the contract must be the act of both parties to it—the insured and the insurer. “The ins. broker, acting for the former, has no authority merely by virtue of his capacity as agent, notwithstanding the pol. have been left in his hands, to demand or consent to the cancellation of the pol.” This was so decided in the case of *Xenos v. Wickham*, in 1863. Weskett said, 1781 : “It is everywhere the usage when underwriters cancel their subs. to a pol., for there being no interest, or no risk, or short interest, to allow them to retain one half p.c.”

Questions of considerable nicety sometimes arise regarding Cancellation. Here is a case, *Baines v. Woodfall*, which came before the Courts in 1859 : A vessel ins. against fire for 12 months ending 29th July, arrived at Liverpool on 12th April, and the insured wrote a letter to the ins. broker, proposing a cancellation of the pol. and return of prem. “say from 12th of April.” The broker sent for the pol., “to put forward returns for cancellation,” and received it. On the 21st April the broker cancelled it, on the terms of returning prem. from the 30th April to 30th July, alleging a custom of ins. brokers not to reckon broken months. The ship was burnt on 22nd April ; and that same day the insured wrote a letter, withdrawing his proposal to cancel, as he had then received no answer. The question was whether, under these circumstances, there had been a cancellation, and on what terms. *Held*, that the pol. must be considered cancelled on the terms originally proposed, and in conformity with which the broker sent for the pol. The plaintiff therefore lost the ins., and recovered the difference on the return of prem. from the 12th instead of the 30th April. [RETURNS.]

Fire Policies.—Cases of Cancellation very frequently arise under Fire pol. In the case of fire pol. upon ships, custom comes into play. In regard to ordinary fire pol. nearly everything turns upon the terms of the contract. We do not recall any cases in point in our English law-books ; but several most instructive cases have been before the American Courts. Thus, in *Goit v. National Protection Ins. Co.*, 1855, the facts were as follow : A condition of pol. provided for cancelling the pol. if risk should be deemed undesirable, and the Co. instructed its agent to cancel the pol. ; but instead of doing so, he only notified the insured of the Co.’s desire to cancel, and at the same time agreed with insured to let the pol. remain until he, the insured, could effect another ins. *Held*, that the pol. was not cancelled, and that the Co. was liable.

But, in the case of *Fabyan v. Union Mut. F. Ins. Co.*, 1856, a by-law of the Co. provided that, “If the risk be increased by any change of the circumstances disclosed in the application, etc., the pol. shall thereupon be void unless an add. prem. and deposit shall be settled with and paid to said Co.” After effecting ins., plaintiff put up 7 add. stoves in the building, and notified defendants thereof, admitting it to be an “increase of risk.” Defendants replied, declining to continue the ins., and said they would surrender his prem. note without charge. Plaintiff wrote again to know if they would not return also the cash prem. he had paid, and that if so he would be satisfied, and get insured elsewhere ; the Co. replied that they would not, but would make no assessment on his note. Afterwards the property was destroyed before anything was done. *Held*, that this was notice to the plaintiff that the Co. declined to assume the “increased risk,” and elected to terminate their ins. under the pol. by law ; and that thereupon the pol. was void.

Life Policies.—There is no custom extant regarding the Cancellation of Life pol. If the life insured travel or reside beyond the limits allowed by the conditions of the pol., and no notice be given to the office, nor any required extra prem. be paid, a FORFEITURE of the pol. occurs. An ordinary surrender of a life pol. for a consideration is the nearest approach to a Cancellation known, as the office ceases to be liable on the pol. from the day of its surrender.

Accident Ins. Pol.—These are sometimes cancelled by mutual consent ; as on change of occupation, or for a pol. of another class.

In other branches of Ins. there is no custom of Cancellation ; there may be SUBSTITUTION OF RISK ; or FORFEITURE.

A bill may be filed to have a void pol. delivered up to be cancelled ; and this whether it is void by reason of fraud in the procurement of the pol., or has become so by reason of the violation of some one of its conditions. But it is discretionary with the Court to sustain the bill or not ; and therefore, if such a bill be filed, after a loss has occurred, to procure a decree, cancelling the pol. on the ground of fraud in obtaining it, as the fraud can be interposed as a defence, and the Co. is protected against unreasonable delay in bringing the action by a clause in the pol., the bill will be dismissed. This was so determined in the case *Hoar v. Bembridge* (Chairman of *Sun L.*) by V. C. Malins, 30th July, 1872.

When Equity relieves, by ordering an instrument to be cancelled, the general rule is, that the party in whose favour the decree is made shall do equity by returning the consideration ; although this rule would not overrule an express stipulation for the forfeiture of the prem. in the particular case. This has been so held in the case of *Barker v. Walters*, 1844 ; and in *Anderson v. Fitzgerald*, 1853.

CANCER (from the Latin, a *Crab*).—A disease consisting of the development of peculiar cells, called *Cancer-cells*, accompanied by a liquid called “cancerous juice,” contained in

the *Stroma* of a new or previously existing tissue. The term is derived from the crab-like spreading of the veins.—*Hoblyn*.

The deaths from this cause (Class, CONSTITUTIONAL; Order, *Diathetic*) in England show unfortunately a tendency to increase. Here are the figures for 10 years:—1858, 6433; 1859, 6676; 1860, 6827; 1861, 7276; 1862, 7396; 1863, 7479; 1864, 8117; 1865, 7922; 1866, 8293; 1867, 8545—thus showing an increase of from 334 per million of pop. living in 1858, to 368 in 1862, 394 in 1864, and 403 in 1867. Over a period of 15 years ending 1864, the deaths were 333 per million.

The deaths in 1867 were:—Males, 2650; females, 5895. Of the males 15 died under 5, steadily increasing up to 35; between 35 and 45, 249; between 45 and 55, 521; between 55 and 65, 764; between 65 and 75, 636; between 75 and 85, 287; between 85 and 95, 35. Of the females 20 died under 5, and very few up to 25; between 25 and 35, 263; between 35 and 45, 878; between 45 and 55, 1488; between 55 and 65, 1578; between 65 and 75, 1106; between 75 and 85, 431; between 85 and 95, 47; and over 95, 3.

CANDIDATE LIFE ANNU. AND LOAN CO., founded in 1843 as a proprietary Co. It issued a few pol., but its affairs were closed in the following or next succeeding year. Mr. Geo. Duerr was Sec.

CANDIDATE LIFE ANNUITY AND FAMILY ENDOWMENT [No. 2].—Another Co. under this title was projected in 1845. But we believe it never really arrived at an active state of existence.

CANDLER [OR CANDELER], RICHARD, Mercer, was appointed in 1574, under grant from Queen Elizabeth, to make and register all manner of assu. pol., intimations, renunciations, etc., in connexion with ins. made in Lond. at that period. [CHAMBERS OF INS.]

CANDLES.—The fires in Lond. during a period of 33 years returned as arising from candles were 3218, or over 11 p.c. of all the ascertained causes of fire; while those from gas during the same period were only about 7½ p.c. of the ascertained causes.

CANE, JAMES CHARLES, commenced his ins. career with the *National Guardian* (No. 1); from thence passed about 1855 to the *Lond. and Provincial Provident*. In 1856 he was connected with the *Herald L.* He was afterwards on the staff of the *Albert*, then of the *Western*. He was next (1864) Assistant Sec. of the *Financial L.*, during its unhappy career. He passed from this to ins. journalism.

CANN, WILLIAM, was Sec. of the *West of England* from 1855 to 1868. He was trained to the bus. in that office, and having passed through nearly all the chief departments, he retired in 1868, after 55 years of active service. The Chairman and Directors spoke in very high terms of the manner in which he had discharged his duties, and the staff presented him with a handsome testimonial. Mr. Cann has since been elected a Director of the co.—a well-merited compliment.

CANSELL, C. S., was Act. and Man.—and we believe founder—of the *Solvency Guarantee Asso.* (1852). In 1854 he promoted the *Mercantile L.* (No. 2). In 1856 the first-named Co. became reconstituted under the new title of *Mercantile Guarantee Co.*, and Mr. Cansdell became its Man. Director, which position he occupied until the Co. passed into liquidation in 1860. In 1858 he published a pamphlet, *New Method of Life Insurance*.

CANTERBURY AND EAST KENT FIRE OFFICE, founded at Canterbury in 1823. Its duty returns paid in 1825 amounted to £1310; in 1827 it reached £1919. In the following year the Co. passed out of existence.

CANTILLON, PHILIP, Merchant of Lond., pub. in 1759, *Analysis of Trade, Commerce, etc.* He is one of the few writers to whom Adam Smith has made special reference. All questions bearing upon marine ins. which appear in this work will be found embodied in these pages under their appropriate heads.

CANTON.—A city in China, with a pop. estimated at 1,000,000. In 1822 a fire occurred which destroyed 15,000 houses. In 1833 an inundation swept away 10,000 houses and 1000 persons. We have not yet heard of English ins. offices penetrating the precincts of this city.

CANWELL, WILLIAM, was Sec. of *State F.*, from 1858. He had formerly held a position in the *Times F.* On the *State* passing into liq., he was appointed Liquidator. In 1861 he promoted *Empire F. and L.* He died a few years later.

CAPE OF GOOD HOPE, formerly called CAPE COLONY.—An extensive territory belonging to Gt. Brit., forming the S. extremity of Africa. On the W. it is bounded by the Atlantic, and on the S. and E. by the Indian Ocean. In 1847 its northern boundary was defined to be the Orange River. Area therefore about 170,000 square miles. The temperature of the Colony varies much in different localities; but its general average may be stated at 67° 20' at Cape Town; that of the coldest being 57°, and that of the hottest 79° Fah. The extremes, however, have a much wider range. The alternations of heat and cold are frequently great as well as sudden. The S.E. wind sometimes begins to blow with all the characteristics of a simoom. This, although very disagreeable, is not regarded as prejudicial to health; and the statistics of the colony certainly go to prove that there are few climates in which, under ordinary circumstances, human life is more likely to run its fullest course.—*Imperial Gazetteer*.

The pop. in 1856 was estimated at 267,096 ; in 1865 at 470,995.

Mr. J. Simpson, C.E., stated at the Inst. of Civil Engineers in 1844, that in the year 1817 he had examined some of the old Dutch fire engines and apparatus here, where the Dutch system remained in the same state as at the capture of the colony in 1804. The workmanship of the pump-barrels and valves was excellent, and the style of construction would be creditable to the shops of our best makers in the present day.

There are several local ins. offices for F. ins., F. and L., F. and Trust, etc., of which we shall endeavour to give a complete schedule in the Appendix. The first—*South African F. and L.*—was founded in 1831.

In the "Stamp and Licences Act, 1864," relating to this colony, but not applying to Natal, there are certain enactments regarding the conduct of F. ins. bus. which require to be noticed. By s. 11, F. pol. and their renewal receipts are charged at the rate of 6*d.* for every £100 or fraction of £100 ins. . . . Pol. and receipts duly stamped are required to be delivered, subject to a penalty on the sec., or accredited agent, to the informer for any omission. By s. 17, *licences* are required, for which a duty is charged of 1*s.* for each £100 of the cap. of every joint-stock co. carrying on bus. in the colony. The term 'joint-stock co.' is defined to mean (1) every co. having a cap. stock divided into shares, of which co. the chief seat or place of bus. is within the colony; (2) every such co., of which the chief seat or place of bus. is not within the colony, "but of which any of the dealings shall by the deed or other instrument regulating such co., be described as to be carried on within the colony; but the licence of every such last-mentioned co. shall be reckoned upon one-half instead of the whole of its subs. cap.;" (3) and "when any joint-stock co. is not such a co. as has been above described, but is one doing business in the colony through the instrumentality of some agency in the colony, then such last-mentioned co. shall ann. take out a licence of the value of £50;" (4) and every local director, mandatory or agent, of such last-mentioned co. who shall transact any bus. or advertise as such, when such licence has not been taken out, is made liable to a penalty not exceeding £100, to be recovered by the Distributor of Stamps by civil action in any competent court.—

Bunyon.

CAPER.—A light-armed vessel of the 17th century used by the Dutch for privateering.

CAPITAL.—The fund of a trading co. or corp., frequently called the "capital stock" of the co. The term has other meanings, as applied to the nation, or to individuals.

A good deal of discussion has from time to time arisen regarding the necessity for, and benefit or otherwise of, cap. in Ins. Asso. Some writers have gone so far as to say, or imply, that all branches of ins. may be, and should be, carried on so as to be self-sustaining. This is a theoretical view; or, if it can be applied in practice at all, it can only be so applied in the case of Life Ins. or Annu. Asso. We may say of every other branch of ins. bus. that some cap. at starting is absolutely necessary. The point to be arrived at is how to strike the happy mean,—viz. to have a cap. sufficient, on the one hand, to inspire confidence and thus bring business; and not so large, on the other hand, as to absorb an undue share of the profits of the bus. when so obtained. It is obvious here that the *nature* of the bus. to be undertaken becomes an important element of consideration.

The earlier Ins. Asso. were almost without exception mut., founded on the principle of mut. contribution; that is to say, an entrance fee, and some small specific payment for expenses and otherwise, was paid by the members in the first instance; and the subsequent contributions were regulated by the good or bad fortune of the enterprise. As frequently as disasters arose, a *pro rata* contribution was levied on the members. This uncertain mode of operation applied alike to Fire, Life, Annu., and other branches of ins. bus. save Marine. The Fire offices were among the first to adopt the principle of a *certain contract*—the payment of a fixed prem. in consideration of being indemnified by an ample cap. against loss. This was towards the close of the 17th century.

Regarding Marine Ins., it had become a long-established usage that such risks should be undertaken by individual underwriters, who, however, were prudent enough to take but very small lines on each individual risk. With the expansion of commerce difficulties arose. Larger ships were employed; and more valuable cargoes were placed on board. Some change in the practice became imminent. But the power of associated cap. was hardly understood in the times of which we are speaking. A few chartered trading cos. had been formed; but these had not been uniformly successful: and, where successful, they had been too prudent to proclaim their success from the house-tops. The rapacity of monarchs with empty exchequers constituted a greater element of danger than the most forlorn of mercantile adventures. It was only during the reign of Queen Anne, 1702-14, that the use and power of associated cap. came to be really understood. The South Sea Co. taught us our first lesson in commercial finance; and in the end opened our eyes to the consequences of inflated credit.

It was during this South Sea mania that Ins. Cos. were first projected with large capitals. For convenience of memory call it 1720—it really commenced a few years earlier. While some of the schemes of that period were being investigated by the law officers of the Crown, it was urged upon them, over and over again, that if Ins. Cos., having large capitals, were founded, "the merchants of foreign nations, in alliance or at peace with us, would now prob. be induced in great numbers to make their ins. in Lond.,

and thereby bring an add. benefit to the kingdom." The argument succeeded, in so far as that the King and Parl. were induced to sanction the formation of two marine ins. asso. each having, at least for that period, very considerable capitals. Numerous projects having large cap. were set on foot for other branches of ins. bus., but were denied legislative sanction. The South Sea panic came; and we hear no more of Ins., or indeed of any other projects, with large capitals, for fully half a century.

Towards the end of the 18th century, Ins. enterprise was again in the ascendant. The few ins. asso. which had survived the South Sea period, and more particularly the *Equitable* Life, which had become completely founded in 1762, had shown results which indicated great scope for the employment of cap. Beyond which, Adam Smith had said, in his *Wealth of Nations*, first pub. 1776 :

The trade of ins. gives great security to the fortunes of private people, and by dividing among a great many that loss which would ruin an individual, makes it fall light and easy upon the whole So. In order to give this security, however, it is necessary that the insurers should have a very large cap.

This statement, coming from such an authority, had very great weight; so ins. cos. with large capitals became the fashion: at last, the rage.

The next phase was but the natural one. The large profits realized by the Ins. Asso. opened the eyes of pol.-holders, and they began to desire, and to claim participation. The science of Life Contingencies had become developed; and the operations of the Life offices had emerged from the stage of doubt and doubting to one of reasonable certainty. Besides, were not the mut. offices pulling down the argument for large capitals in that branch of ins. bus.? The discussion now turned really upon what was the *smallest* amount of cap. on which a life office might be founded; and when even that might be dispensed with. We may glance at one or two of the writers of this period.—

Mr. Geo. Farren said (1823): "The period at which a subs. cap. may be fairly said to be worse than useless is when the ann. income from prems. trebles the amount of the largest single risk." He was at that time Resident Director of the *Economic*. His views underwent some change when he afterwards held a similar position with the *Asylum*. What would have become of the policy-holders in the last-named co. if the subs. cap. had been discharged?

Mr. Charles Babbage, in his *Comparative View*, 1826, said:

Since the fluctuation in the price of life, arising from the natural uncertainty of its duration, is considerably less than that which occurs in the price of most commodities, a person who deals in securities dependent on lives requires less cap. to carry on his bus. than one who trades to an equal extent in any other species of merchandize.

In the following year (1827) Mr. Babbage gave evidence before the Parl. Committee on Friendly Sos. As this question of cap. was then attracting a good deal of attention, he, at the request of the Committee, entered more minutely into the subject:

Supposing the laws of mort. applicable to a class of assurers to be known, what cap. will be necessary in order to meet all the probable deviations from that law? Let us suppose 5000 persons forming a so., and that from the T. they employ 100 deaths may be expected ann. If each is insured for £1000, the question is, what cap. is sufficient for them to commence with—is it £5000, or £5,000,000? I have seen no attempt to answer such a question on just principles; all the remarks I have met with on the subject appear to me vague, because they rest on no accurate enumeration of facts, and the results are not legitimately deduced even from the assumed facts. . . . In the first place, some chance must be agreed upon, which the body are willing to risk. It would be folly to take so small a cap. that it should be only 10 to 1 against the so. becoming insolvent; but it would be unnecessary caution to take so large a cap., that it should be ten millions to one against the same event happening. What the proper risk is must be determined by the opinion of prudent persons, not by any calculation; it will differ in different circumstances, and in the opinion of different individuals. It will be sufficient for my supposition to assume that the so. are satisfied if their T. are such that it shall be ten thousand to one against their cap. being exhausted.

The next circumstance on which the amount of cap. depends is the rate of profit added to the payment which the T. of mort. they employ requires for each contract. If the body subs. a sufficient cap. at the commencement, no addition, or only a small one, is necessary. If they commence without any, a considerable addition to the calculated payments would be necessary at first, in order to provide, by its accumulation, a sufficient cap.

Another and a most difficult question remains. We have supposed 5000 persons forming a so., constantly kept up to that number, or near to-it, either above or below, and that according to the T. they use, 100 persons are expected to die in each year. In the first place we must ascertain, by *calculation from their T. of mort.*, the limit which it is ten thousand to one that the number of deaths in any one year will not exceed. Let us suppose that it is found that it is ten thousand chances to one against more than 200 persons dying within the year. Then it is necessary that for the first year their cap. should be such as, when added to the total ann. payments, it shall just equal the sum due to the representatives of the 200 persons who have died.

Some of the considerations here evolved have been touched upon in our art. AVERAGES, DOCTRINE OF.

In this same year (1827) Mr. Barber Beaumont, the founder and Man. of the *Provident* L., delivered an address to the members of that inst., wherein he offered the following sagacious obs.:

We now see the wisdom of having limited ourselves to a *comparatively small orig. cap.*, viz. £250,000. In concerns of this kind the subs. reasonably require, and are equitably entitled to part of the profits which the money they have advanced and risked tends to procure. In our case the periodical allotments of profit now yield us an int. of about 4 p.c. in add. to the int. on our orig. deposits [paid-up cap.]; but if we had started with a cap. of £2,000,000, the int. on the same add. of profit, dispersed over such an extended cap., would only have yielded us a *half* p.c. with the int. on the deposits, or perhaps 4½ or 5 p.c. div. after 21 years' risk and labour.

This was very neatly and very accurately put. He then travels away from his own co., and takes a survey of what was going on in this direction elsewhere about this period :

But in the new ins. offices which have been set up during the late rage for joint-stock cos., 2, 4, and even 5 millions are the capitals with which they set out. Such large caps. could not be necessary for the purposes of indemnity, unless it were seen that, by the lowering of the rates [prems.], the bus. was likely to become a losing one; and that unless large caps. were raised to cover a course of heavy losses, the cos. would not last long enough to satisfy the projectors for their trouble. *But the large caps. have had a more immediate use.* Share-buyers did not look to conditions or consequences; they and their successors were accordingly bound to effect ins. *in proportion to the amount of their shares.* Thus by compelling the shareholders to effect ins. themselves in their own office, whether they had *real occasion* to ins. or not, and extending their number to a vast amount, a bus. was at once created sufficient to give employment to an estab. of directors, bankers, solicitors, clerks, etc. But a bus. thus forced can never be a beneficial one to the shareholders. If a man have occasion to ins. he will naturally, without compulsion, prefer an office in which he is a shareholder, provided it be as good a one as any other; but if it be *inferior*, it is very hard that, in add. to having been entrapped into a bad concern, he should be compelled to lay out more money to ins. in it, in order to keep it going. If he have not occasion to ins., it is still more hard upon him that he should be compelled to do so; . . . but they are sometimes let off upon the condition that they bring others to ins. to the required amount in their stead. But it is not always agreeable to go about begging for relief in this manner, particularly when it is seen that after all the profits (if any) when divided among a large co-partnery can never be adequate to the obligations to which every shareholder binds himself and his successors. We accordingly see that the shares in these *compulsory offices are generally at a discount; and that the shareholders after a time dissolve them if they can.*

This was a very accurate picture of the course of events at that period.

Mr. Charles Ansell said before the Select Parl. Committee on Joint-Stock Cos., 1841 :

As to L. assu. offices, if they are based upon proper principles, though probably some amount of cap. may be essential in the first instance, I very much doubt whether a large cap. is useful; it is rather useless, or worse than useless, to have a large paid-up cap., or even a large nominal cap.

Mr. Kirkpatrick, the then Act. of the *Law Life*, said he entirely agreed with Mr. Ansell.

This question of cap., though so much discussed, could never be regarded as finally disposed of until after the appearance of the Report of the Parl. Committee on Assu. Asso. which sat in 1853. Before that Committee nearly all the leading Act. of that day—and some few of another category—were called to give evidence; and it will be of permanent value to record in brief form their individual views on this one point. We take the witnesses in the order in which they were called.

Mr. John Finlason, Gov. Act. :

No great cap. is necessary to set agoing a L. ins. office, if honestly conducted, and if the expense of management is prudently kept down, because every prem. of assu. for the whole life comprehends not merely the risk of life at the commencement of the ins., but also a portion of cap. sufficient to lay up a stock to meet the claims ultimately. . . . The funds for the man. of an office is a cap. of another kind, which in my opinion ought to be created by funds advanced, either by the proprietors, or borrowed on the faith that they can be returned at some future day; for it is plain that the man. of a L. ins. office upon an extensive scale, which entails at the present day an immense amount of adv., cannot be conducted very cheaply; and the funds necessary for that purpose cannot come out of the prems., which are calculated to meet the claims on the pols. (565).

Mr. Charles Ansell, Act. of *Atlas*, etc. :

Now for all purposes of L. assu. a large cap. is certainly not necessary. I have not myself perceived any evil to come from the estab. of mut. assu. sos., who for the most part have no paid-up cap.; but still there may be a degree of risk in the early progress of an inst., which should make it wise, for that reason alone, to say that there should be some means for meeting possible early claims, which might exceed the amount of prems. received to meet them. But the main reason which I should have for suggesting the requirement of cap. is that it appears to be the only test for the position in society occupied by those who found such important inst. (796).

Mr. W. T. Thomson, Act. of the *Standard and Colonial*, called :

You consider some paid-up cap., both in the case of proprietary offices and mut. offices, absolutely necessary for the purpose of defraying the preliminary expenses and early contingencies of the office?—I do. And it is with that view you recommend that this paid-up cap. should be provided for?—It is one reason. Would one of your views, in requiring that paid-up cap., be that you should have some test of the respectable position in society of parties promoting new asso. offices, and also of their *bonâ fide* intentions with regard to the public?—Certainly. (879-81).

Mr. J. J. Downes, Act. of the *Economic* :

I think a guarantee fund, in the infancy of a life assu. so., is a very important thing. . . . For the purpose of giving confidence to the public do you think it is necessary?—For the purpose of giving confidence it is. If a person wishing to assu. his life, knew he had a guarantee of £30,000 or £50,000 in common to himself and all others, he would feel more confidence in the so. than if there were only £5,000 or £10,000; therefore if a guarantee cap. can be obtained without great expense to the so., I think it should be done, though I do not think it absolutely necessary for the bus. of life assu. . . . Do you know any office without a guarantee fund?—I do not, but I think all ought to have some guarantee fund. (1190-1207).

Mr. T. R. Edmunds, Act. of *Legal and General* :

Then is it your opinion that all new offices, not to speak of those particular offices, ought to have a certain amount of cap. in the first instance to pay the extraordinary expenditure of the first few years?—I think there ought to be some kind of guarantee that they should reserve a sufficient amount equivalent to the value of the pol. Otherwise do you consider that the office would be in a safe condition as regards its powers to meet the losses of the assured?—I do not; it is an essential point that the office shall always be in possession of the sum representing the value of all its pol. (1252-3).

Mr. Samuel Brown, then Act. of *Mutual* :

My own opinion is that, from the great competition prevailing at present, it is impossible to carry on an office without a guarantee fund—without a paid-up guarantee fund I should say in the present day, because the expenses are so greatly increased that you would require in every case some fund to

fall back upon, in order to meet the risks (1523). . . . How would you estimate the extent of the necessity of a guarantee fund in each case?—There is no particular rule that can be laid down. . . . I conceive a cap. of from £30,000 to £50,000 reserved as a guarantee cap., independent of what is necessary to estab. the bus., would always form a sufficiently safe guarantee fund for any co. (1609-11).

Mr. Samuel Ingall, Act. of *Imperial* :

Do you think that a paid-up cap. in the first instance is indispensable to the safe estab. of assu. offices?—Quite indispensable in my opinion. (1759). . . . I should like to add, with regard to cap., that the amount should be very much in proportion to the liabilities undertaken; I think that £50,000 should be the smallest sum which a so. should commence assu. lives with. (1896).

Mr. Charles Jellicoe, Act. of *Eagle* :

Is it also your opinion that a paid-up cap. in every case should be insisted upon previous to a new office being estab.?—I think it should, and that some such sum as £10,000 is only reasonable under present circumstances. Do you think £10,000 would be enough?—I think it is sufficient for the purpose. (2004-5).

Mr. F. G. P. Neison, then Act. of *Medical Invalid* :

Then you consider it essential, at the commencement of the inst., that it should have cap.?—It is impossible to estab. an inst. with the activity which I think necessary and prudent to call into action without money: very few people will so devote themselves to the interests of an office without some *quid pro quo*. (2277). . . . Then you would consider, in the case of mut. offices, as in the case of proprietary offices, an orig. subs. cap. from some source or other was necessary to give security and facilities for the success of the office?—I do not think for security, but for facility; I think it quite possible a mut. office may be formed without cap., if they will regulate the amount assured upon each life so as to prevent any disaster; in fact such cos. have been so formed. (2285).

Mr. J. A. Higham, then Act. of the *Royal Exchange* :

I think I understood you to say that you look on a paid-up cap. as of importance as a guarantee of the *bona fides* of the parties who set up any office?—That is the only ground on which I would ask to have it made a legislative enactment. As a matter of opinion, I think it highly desirable to have a proprietary subs. cap. (2471). . . . You have expressed the opinion that every co. ought to have a paid-up cap.; do you conceive that that paid-up cap. should be the same in all cases, whatever the extent of the co.?—As a matter of opinion I hold that the cap. ought to vary, and ought to have reference to the prob. amount of the co.'s engagements. . . . (2533).

Mr. John Hornby, then Act. of *Prince of Wales Life* :

I am in favour of a paid-up cap.; a small one, not as a guarantee of the *bona fides* of the undertaking, but because the bus. will increase much more rapidly with money than without it; the same amount of bus. will be done in 3 years that would otherwise be done in 6. (2561).

Mr. E. J. Farren, Assistant Act. of *Asylum Life* :

Do you approve of the principle of offices starting in the first instance upon a paid-up cap.?—Decidedly. On what ground do you consider that necessary?—I consider that it is implied by the very nature of assu. calculations; I consider that the question of cap. and no cap. is precisely the question of dependent and independent risks. (2619-20).

Mr. E. Ryley, Consulting Act. :

The introduction of cap. into assu. offices has been the source of a great deal of harm, although of a great deal of benefit also: the harm that it has done has been this—that life assu. is no longer considered as a sort of social inst., but as a matter of trade and barter; different cos. with cap. come into the field and get as much bus. and profit as they can. (2822).

Mr. Alexander Colvin, Act. *United Mut. Mining L.*

Do you think any reasonable amount of paid-up cap. would give a security to the public in regard to realizing the profit?—No; the ultimate security of the public must depend on the prem. The only use of cap. is that suggested by Mr. Neison, to facilitate the carrying on of bus. in the first instance. *Chairman* : To spend it all?—*To spend it all*. (2926).

Mr. Alexander Robertson, Act. of *Indisputable L.*

What is your opinion about the payment up of a certain portion of cap. as a security for these offices?—I think the payment of cap. of any kind is extremely hurtful. . . . A cap. is totally inconsistent with the principle of mut. assu. (3407-8).

Mr. George Taylor, then Assistant Registrar of Joint-Stock Cos., said before the same Committee :

A large cap. is an expensive thing to an ins. co., without being of much corresponding advantage; what I should wish would be simply to require a deposit sufficient to furnish a security that the co. is composed of persons who can be safely entrusted with the funds paid into its hands. (371). . . . I do not think the bus. of L. assu. requires cap. The profits of L. assu. do not flow out of the employment of cap. as in other cases. (398).

The numbers at the close of the paragraphs are the references to numbered paragraphs of reported evidence.

Dr. Farr said in his famous letter in 12th Report of Reg.-Gen., pub. same year (1853) :

It is clearly in this, as in most other trades, disadvantageous to employ more cap. than is required to carry on the bus. safely, as in proportion to its amount the rate of profit is diminished.

It is quite noticeable that there was not one of these authorities who attempted to support the theory of a large cap. for the bus. of L. ins. Certainly a large cap. is not requisite. Many of the offices which now have it would be only too thankful if it could be repaid without the process of reconstituting the co. which it generally involves. Our own view is that no life office should be hereafter formed with a larger cap. than £50,000—of which at least one half should be paid up; for £20,000 will be required for deposit under the L. Ins. Law of 1870.

There is a method by which the security of cap. may be obtained, without trenching upon the profits of the pol.-holders, and it is this: an asso. requires the guarantee of a

Ins. Office was the office then existing for regulating *Marine* Ins. ; and the underwriters of marine pol. also undertook these risks against captivity. [CHAMBERS OF INS.]

In 1711 there was projected in Lond. the *Original Office for Ins. Officers and Seamen, Sums of Money on their being LOST or TAKEN, and relieving their Widows and Orphans*. We shall give some more details concerning it under hist. of LIFE INS. In the same year another similar Ins. project "for the encouragement of navigation for masters, mates, and other seafaring men that are burnt, sunk, or taken." This will also be spoken of again under LIFE INS.

In the Ordin. of *Königsberg* [PRUSSIAN MARITIME LAWS], promulgated 1730, there is the following :

X. All ins. on expected gain, wagers, or such inventions, future freight-moneys, seamen's wages, and men's lives, are universally forbid, and declared of no force ; the seamen are, however, permitted to ins. what goods and effects they may have ; nor is any one going on a hazardous voyage prohibited from ins. by a pol. lawfully executed a certain sum of money for his ransom in case of being taken.

The *Hamburg* Ins. Ordin. of 1731 contains the following :

Title 10.—*Of assu. against risk from the Turks, and upon men's lives*.—I. Although according to the regulation in art. vii. of title 4, the risk against the *Turks* is commonly included, when an ins. is made against the risk of the sea in general, yet when the same is made upon the risk against the *Turks* only, whether it be with respect to the ship, or goods, or the liberty and life of any person, then the assurer is only answerable for that, and for no other risk of the sea whatever.

II. In all assu. which regard the ransom of a person out of Turkish slavery, or the lives of them, if in the latter case they should be killed in fighting against the *Turks*, or die in slavery before they are redeemed, the policies numbers 5 and 6 hereto annexed shall be made use of, as before mentioned ; and the name, station, and quality of the person upon whose liberty and life the assu. is made must always be express'd therein.

III. As soon as advice is received that the person ins. upon is taken and carried in by the *Turks*, the assurers shall, within the space of two months, pay the respective sums they have underwrote, without deducting 2 p.c. as otherwise is usual, in full of the stock for redemption of slaves at the Admiralty here, and from thence the money is not to be delivered to the party who undertakes the redemption of the person out of slavery, till the prisoner is actually at liberty, and arrived on the Christian shore.

IV. If a person carried into slavery, and upon whom assu. is made for his liberty and ransom only, but not for his life at the same time, happens to be killed in an engagement, or dies before he is redeemed, then the money, in case the assurers have already paid it, shall be returned to them, only 10 p.c. of the sum underwrote is to be left behind for the benefit of the wife and children of the deceased, and as to anything else the assu. becomes thereby void.

V. But if the assu. is at the same time likewise or more particularly made upon the life of any person, that is to say, in case such person was to die in slavery before redeemed, or be killed in an engagement against the *Turks*, or otherwise die a natural or accidental death, by water or on shore, during the voyage, then the assurers must pay the sum underwrote by them to the party that made the assu., within the usual time immediately after advices, that may be depended upon, have been received thereof, and been duly intimated to them.

VI. By risk from the *Turks* is only and merely the danger from actual *Turks* and *Barbarians*, and not from other pirates or cruizers at sea.

The forms of pol. referred to above are then given ; they are numbered 5 and 6. The former, which is a L. pol., will be given under LIFE INS. The other is as follows :

VI.—*Policy against risk from the Turks, and on the money to be paid for ransom*.—We, the underwritten assurers, for us and our heirs, assure unto . . . , each of us the respective sum signed hereunderneath, at . . . p.c. prem., upon the person of . . . , sailing as . . . on board of the ship called . . . , bound from . . . to . . . , or if this ship should happen to be lost, or by any other means rendered incapable to finish her voyage, then upon such ship or ships, whereon he shall embark himself in order to complete the aforesaid voyage, and on every way whatever, whether by water or by land. Pray God conduct him in safety ! We take upon ourselves the hazard and risk of the liberty of this person, the said . . . , in case he should be taken prisoner by any *Turkish, Moorish, Barbarian*, or other un-Christian pirates and cruizers, and be carried by them into any of their ports into slavery. And if such a misfortune should happen to him, which God forbid ! then we promise to pay the sums by us respectively here underwrote into the public bank of this city for the redemption of slaves, towards his release and ransom, within 2 months at furthest after certain advice has been received of his being taken, and upon producing this pol. ; with this proviso however, that these sums we have underwrote hereunto shall be employed to no other purpose but the ransom and release of the person above mentioned, and whatever may depend upon procuring him his liberty. We consequently submit ourselves in all these respects to the Ordin. of this City of Hamburg, relating to assu. and averages, with all the clauses and conditions thereof, whether printed or added hereunto in writing, which latter shall be equally valid with the printed ones, or even preferable to them. For the true performance whereof we bind all our goods and chattels, without fraud or deceit. Thus agreed by . . . , Sworn Broker, *Hamburg*, the . . .

The Ins. Ordin. of *Bilboa*, 1738, which in the main merely re-enacts the provisions of an earlier Ordin. of 1560, after forbidding ins. on imaginary gains, and on men's lives, continues :

XIII. But all sailors and passengers may freely get the *liberty of their persons insured* ; and in this case the pol. shall contain the name, habitation, age, and condition of him who gets himself ins. ; his marks and other circumstances that shall distinguish him ; and the name of the ship, the anchoring place where she is, and the port she is bound to ; the sum to be paid in case of capture, or bondage, as well for the ransom as charges of returning ; to whom the money is to be delivered ; and under what penalty ; signifying the term in which the ransom ought to be made, by what means, and in whose care the soliciting of it shall be committed.

XIV. If it should happen that the assurer having complied with the remittance of the money ins. for the redemption of the captive or prisoner, he should die before being ransomed, or at liberty ; the recovery of the money which the insurer shall have disbursed and remitted for the said ransom or liberty shall remain for his account and risk, because in such case it shall belong to him.

In the *Amsterdam* Ins. Ordin. of 1744 there were special provisions regarding ins.

against captivity, and a form of pol. was provided. The clauses relating hereto [xiii. and xiv.] and the form of pol. we have already given under AMSTERDAM, INS. ORDIN. OF.

The Ins. Ordin. of *Copenhagen*, 1746, says, "No ins. are to be allowed on uncertain and precarious things ; or imaginary or such kind of profit, or on the men's lives, *except for ransoming from Turks and pirates.*"

The Ins. Ordin. of *Stockholm*, under date 20th Oct., 1750, says :

Art. 9. *Of insuring the ransom of seafaring persons in case of being taken by the African corsairs.*—I. Under this ins. are understood only the dangers and accidents to which a seafaring person is or may be liable from Turkish, Moorish, or Barbarian ships, or corsairs, exclusively of pirates, unless it be otherwise agreed on betwixt the insurers and the insured.

II. A seafaring person being taken by the afore-mentioned nations, and carried into slavery, the insurer shall, without any deduction of the 2 p.c. usual in other cases, and within the term of a month after proper and certain proofs are made of the capture, pay to the true owner of the pol. the sum therein insured on his person.

The form of pol. given in this Ordin. for this branch of ins. greatly resembles that of *Hamburg*.

Magens, a most learned writer upon marine and other branches of ins., in his *Essay on Ins.*, pub. 1753, says, "All Ordin. of ins. allow such contracts to be made regarding captives in slavery ; but the contracts are to subsist no longer than the bondage does, or till the person be redeemed.

In Ricard's *Negoce d'Amsterdam*, pub. about the middle of last century, we find the following :

The 24th art. of the first Ordin. of Amsterdam [we do not think the Ordin. of 1598 is here referred to] prohibits the making ins. on any *lives* whatsoever ; and many people confound *liberty* with life, imagining that ins. the one was not more lawful than the other ; which occasioned many difficulties between the owners of ships and their captains, bound to the Mediterranean, and adjacent parts, *where they run the risk of being taken by the Turks* when at war with them ; and on the least rupture that we now have with any one of the States of Barbary, *the captains designed for the Mediterranean will by no means sail till their owners have insured 3 or 4000 guilders upon their liberty, in order to redeem them with this money, in case they are so unfortunate as to be taken.*

Mr. Francis, in his *Annals, Anecdotes, etc.*, 1853, gives the following passages in elucidation of the necessity of ins. against captivity :

And in those days there was not merely a risk of storm and whirlwind. Man was more cruel than the tempest ; and the galleys of the Turks were then as much feared by the masters of trading vessels as the corsairs of the Algerine were dreaded at a later period. They roved the seas as if they were its masters ; they took the vessels, disposed of the cargo in the nearest market, and sold the navigators like cattle. The only way of mitigating this terrible calamity was by some mode of ins., to procure their rescue if taken ; and we find that to attain so desirable a result they paid a certain prem. to their merchant freighters, who in return bound themselves to pay a sufficient sum to secure the navigators' freedom within 15 days after the certificate of their captivity, the ordinary days of grace being lessened on such policies.

In those days also, when crusades were common, and men undertook pilgrimages from impulse as much as from religion, it was desirable that the palmer should perform his vow with safety, if not with comfort. The chief danger of his journey was captivity. The ballads of the fifteenth century are full of stories which tell of pilgrims taken prisoners, and of Emirs' daughters releasing them ; but as the release by Saracen ladies was more in romance than reality, and could not be calculated upon with precision, a personal ins. was entered into by which, in consideration of a certain payment, the assurer agreed to ransom the traveller, and thus the palmer performed his pilgrimage as secure from a long captivity as money could make him. It is true that his care for his personal safety may detract somewhat from a high religious feeling ; but truth is sadly at variance with sentiment, and the pilgrims of the Crusading period were but too glad to lessen the chances against them.

We do not think there can be any doubt but that these captivity ins. led very much up to the practice of L. ins., or that they were often substituted for it in States where L. ins. was forbidden. [CASUALTY INS.] [INS. WAGERS.] [LIFE INS.]

CAPTURE.—The taking by an enemy as a prize, in time of open war, or by way of reprisals, with intent to deprive the owner of all dominion or right of property over the thing taken. It is deemed lawful when made by a declared enemy, lawfully commissioned, and according to the laws of war ; unlawful when it is made otherwise. Its legality or illegality does not affect the liability of the underwriters as against the insured : whether lawful or unlawful, he is equally liable.—*Emerigon ; Arnould.*

The ordinary pol. of marine ins. contains the following :

Touching the Adventures and Perils which we the assurers are content to bear and do take upon us in this voyage, they are of the seas, men-of-war, fire, enemies, pirates, rovers, thieves, jettisons, letters of mart and countermart, surprisals, taking at sea, arrests, restraints and detainments of all kings, princes, and people, of what nation, condition, or quality soever.

Far on the horizon's verge appears a speck,

A spot—a mast—a sail—an armed deck.—*Byron's Corsair.*

The underwriter takes upon himself the burden of all loss or damage thus occasioned, whether it consist of injury to the vessel's hull, spars and rigging, by an enemy's shot or shell, or by other hostile acts, or the total destruction of the property insured, by the operation of the same causes. As, however, merchant vessels do not generally offer resistance to the attack of an armed ship, the casualty which most frequently results from hostilities is capture.—*McArthur.*

Captured property is not considered to have been diverted from its original owner until it has undergone sentence of condemnation in a legally constituted court of the enemy [PRIZE COURTS] ; but the insured may abandon to the underwriter, and claim for a total

loss on first hearing of the capture. If the abandonment is accepted by the underwriter, the insured receives all he can claim under his pol., and all right of salvage passes to the underwriter. [ABANDONMENT.]

If the insured, on the capture of the property, foregoes his right to abandon, and elects to litigate the capture, he cannot reverse his decision while the circumstances remain the same; but in the event of such a change occurring as to render the loss absolutely total, the right to recover a total loss revives. This was so determined in the Exchequer Chamber in June, 1870.—*Stringer v. English and Scottish Marine, re the "Dashing Wave."*

All necessary expenses incurred in the redemption or recovery of captured property are recoverable under the pol., except the ransom of Brit. ships from an enemy, which is illegal under the 22 Geo. III. c. 25; but this prohibition applies exclusively to ransom from enemy's capture, and does not extend to compensation paid by a neutral to a belligerent, or ransom paid to a pirate, all of which are recoverable as a general average loss.—*Arnould; McArthur.*

Insurers are liable for all damages and charges proceeding from any capture, detention, or reprisal, except it can be proved that the insured designedly *concealed* circumstances from them, which he knew might expose the ship to such accidents, and therefore would not declare them to avoid giving more than a common prem.: but whatever *contraband* goods may have been clandestinely shipped by other people, unknown to the insured, and the vessel thereby exposed to a capture or *detention*, cannot in any shape prejudice his ins., unless the insured stipulated that the underwriters should be free of captures.—*Magens, 1755.*

If a ship is driven by stress of weather on an enemy's coast, and there captured, it is a loss by capture, and not by the perils of the sea.—*Green v. Elmslie, 1794.*

Where a ship was ins. for a voyage or a cruise of 3 months, and taken by the enemy within that time, but before she was carried *infra præsida hostis*, was retaken by an Englishman, and was at the time of the action a living ship:—*Held*, to be a total loss to the insured.—*Pond v. King, 1747.*

If a pol. is on a ship bound to a foreign port, until she is 24 hours moored in safety there, and, previously to such ship's arrival at her destined port, an embargo is laid on all English vessels in that port, and she on entering is also detained, and her crew made prisoners of war, the insured is entitled to recover.—*Minett v. Anderson, 1794.*

Where a neutral ship is arrested at sea by a belligerent cruiser, and, under suspicion of having enemy's goods on board, is carried for search and adjudication into a hostile port, as the result may be the condemnation of ship and cargo, but more especially as the act is done in time of war, and as a warlike measure, this is rather to be esteemed a *capture* than a simple arrest, and accordingly is *prima facie* a ground of abandonment. This was so held in the case of *Barker v. Blakes, 1808.* See also Marshall, and Emerigon.

A pol. was effected on 6500 bags of coffee, warranted "free from capture, seizure, and detention, and all consequences thereof, and free from all consequences of hostilities, riots and commotion." The coffee was shipped on board a vessel bound for New York. At the time of the ship sailing a war had broken out between the Northern and Southern States of America; and as an act of hostility, a light, which had usually indicated the position of Cape Hatteras, was extinguished. The war and the extinction of the light were unknown to the captain, and, from ignorance of the latter, he fell out of his reckoning, and ran ashore. Certain persons on the coast had recovered 120 bags of coffee, when they were interrupted by soldiers, who appropriated the 120 bags, and prevented others being saved. The captain and crew were taken prisoners. But for this interference, 1000 more bags might have been saved before the breaking up of the ship:—*Held*, that the loss of the ship was by perils of the sea, and not "by the consequences of hostilities" within the meaning of the pol.; that as the 1120 bags were lost by reason of the interference of the soldiers, that loss was covered by the exception, and the insurers were not liable; but that for the remainder the insurers were liable, as for a loss by the perils of the sea.—*Ionides v. Universal Marine Ins. Co., Common Pleas, 1863.*

Where the pol. contains such words as these, "warranted free from capture, seizure, and detention, and the consequences of any attempts thereat, and all other consequences of hostilities," it means that the insured takes upon himself the burden of such consequences, and therefore that in such cases they do not constitute any portion of the perils the underwriter insures against. They are, as it were, lifted out of the risk covered by the pol. The last-quoted case (*Ionides v. Universal Marine*) may be considered the leading case upon this point. [CLAUSES RESTRICTING UNDERWRITER'S LIABILITY.]

Enough has been said to show that the incidents of Capture are of a very complex character. We do not intend to pursue them in detail. They will come before us from time to time under various heads.

The law of warlike capture derives its rules from the assumption that communities are remitted to a state of nature by the outbreak of hostilities, and that, in the artificial natural condition thus produced, the institution of private property falls into abeyance so far as concerns the belligerents.—*Maine's Ancient Law.*

The Ins. Ordin. of *Amsterdam, 1744*, contained a special scheme of ins. for the ransom of ships and lading captured. [RANSOM OF SHIP OR CARGO.]

In 1801 M. de Marten, a French writer, pub. an *Essay on Privateers' Captures, and particularly Recaptures, according to the Laws, Treaties, and Usages of the Maritime Powers of Europe*, etc. Mr. T. H. Horn pub. a trans. of the same with notes in the same year.

In 1815 Mr. Henry Wheaton pub. in N.Y. his famous *Digest of the Law of Maritime Capture and Prizes*. It is a work of the highest authority, but is now very scarce.

At the Social Science Congress held at Birmingham in 1868, the question of Capture engaged a good deal of attention. The President, the Earl of Carnarvon, thus introduced the subject :

The two grave questions, whether private property at sea should be exempt from capture during war, and under what circumstances ought a change of nationality to be authorized, important as they are to other countries, are even more important to England, from the vastness of her commercial relations, and the almost universality of her political interests. . . . The right of seizure is now founded, rightly or wrongly, upon the principle that when a State is at war, its subjects are at war also ; and the question must ultimately resolve itself to the issue, whether war shall be carried on between the Govs., or between the entire pop. of different countries. On the one side it will be argued that the loss and suffering inflicted upon the peaceful traders of a belligerent power are cruel and impolitic ; on the other, that as war is an evil of so extreme a kind it ought only to be undertaken in the hope of securing peace. So—subject to the mitigations which Christianity has enforced—whatever entails upon the wrong-doing State the greatest pain and inconveniences will lead to the speediest redress and the earliest cessation of hostilities.

The President of the Jurisprudence Department, the Right Hon. W. N. Massey, also dilated upon the subject in his opening address ; while the acting Chairman of the same Department, Mr. W. Vernon Harcourt, entered very fully into many of the practical considerations involved. At the same Congress, Mr. E. C. Clarke, Barrister-at-Law, raised the question in a direct form, by a well-written paper, *Ought Private Property at Sea to be Exempt from Capture during War?* A paper on the same subject, by Lord Hobart, was also read. An important discussion followed ; but nothing was done, or could be done, but to draw attention to such reforms in the practice as may be practicable. [ABANDONMENT.] [DETENTION.] [GENERAL AVERAGE.] [OCCASIONAL CLAUSES.] [PRIZES.] [SALVAGE.] [WARRANTIES.]

CAPTURE OF PERSONS, INS. AGAINST.—See CAPTIVITY INS.

CARBUNCLE (Order, ZYMOTIC ; Class, *Miasmatic*).—The deaths from this cause in England show now very slight fluctuations. For ten consecutive years they have been as follows : 1858, 246 ; 1859, 236 ; 1860, 247 ; 1861, 193 ; 1862, 206 ; 1863, 237 ; 1864, 266 ; 1865, 265 ; 1866, 228 ; 1867, 235. Over a period of fifteen years ending 1864 they have averaged 12 to each million of the pop. living.

The deaths in 1867 were : Males, 164 ; Females, 71. The deaths are very small in numbers in the early ages, and increase steadily up to about 70, and then decrease at the more advanced ages.

In a paper by Dr. W. A. Guy, read before the Brit. Asso. at Glasgow, in 1855, *On the Fluctuations in the Number of Births, Deaths, and Marriages, and in the Number of Deaths from Special Causes, in the Metropolis during the last 15 Years from 1840 to 1854 inclusive*, this learned writer said :

The group which comes next in order to Zymotic diseases is one which obviously owes its place to the circumstance of its comprising one disease at least which has of late years become epidemic, and has thus obtained a right to be placed itself in the Zymotic group, namely, *Carbuncle*. This disease, which in the first 7 years of the 15 caused a number of deaths varying from 1 to 4, in the last 7 years caused a number of deaths varying from 7 to 36.

Dr. Challis, who gave evidence before the Committee on Adulteration of Food, etc., 1856, said, "He believed that the disease called *Carbuncle*, which had much increased among the lower classes, was to be traced to the extensive use of *diseased meat*. Even the higher classes were not exempt." "He knew of one instance of a butcher who never ate a morsel of the meat he sold himself for this reason."

CARCATUS.—Loaded ; as a ship with cargo on board.

CARD SYSTEM.—The card system as applied to mort. obs. has many advantages. Suppose it to be intended to test the mort. experience of a L. office at a given date, and for the first time. The leading details of every pol. on the register should be written on a separate card—that is, one card for each pol.—viz. : sum insured ; name of insured ; age—date of birth ; date of ins. ; number of pol. ; whether accepted at ordinary or special rates ; whether with or without profits ; whether whole life or short term. The cards when completed can then be classed in relation to any of the foregoing details, and re-classed as often as occasion may require. They can also be stowed away in a small space, and can be used at any subsequent investigation. The system was introduced by Mr. J. J. Downes, late of the *Economic*, for the purpose of specially testing the continued experience of that So., and was adopted by all the offices contributing to the mort. experience, 1869, resulting in EXPERIENCE TABLE NO. 2.

CARDIAC (properly *Kardiac*, from the Greek, *the heart*).—Relating to the heart.

CARELESSNESS OF MASTERS AND SAILORS.—This was one of the risks insured against in the pols. of marine ins. issued under the Ins. Ordin. of Amsterdam, 1744. [AMSTERDAM, M. INS. ORDIN. OF.]

CAREY, E., Underwriter of *Globe Marine* since its estab.

CAREY, GEO. G., Teacher of Mathematics, Commercial Inst., Woodford, pub., in 1818,

A Complete System of Theoretical and Mercantile Arithmetic, comprehending a Full View of the various Rules necessary in Calculation, with Practical Illustrations of the most material Regulations and Transactions that occur in Commerce, particularly Int., Stocks, Annu., Marine Ins., Exchange, etc., etc. Compiled for the use of the students at the Commercial Inst., Woodford. This book has still a very good reputation.

CARGO.—The lading of a ship; the merchandize or wares contained and conveyed in a ship. [DECK CARGOES.]

CARIES.—This term, used in a medical sense, denotes *rottenness* or *decay*.

CARLISLE, CITY OF (County Cumberland).—A frontier town of England, wherein for many ages a strong garrison was kept. Just below the town the famous Picts' wall began; and here also ended the Roman highway. But our present interest centres in the city entirely on account of obs. taken therein, resulting in the formation of the **CARLISLE T. OF MORT.**, of which we shall give an account under that head.

In 1763, at the request of Dr. Littleton, Lord Bishop of Carlisle, the inhabitants were numbered with great care. There were at that time in the city and suburbs 1059 families, constituting 4158 inhabitants. In Jan. 1780 another survey was made under the inspection of Dr. Heysham, "when there were in the district before surveyed," 891 houses; 1605 families; 6299 inhabitants. "This astonishing increase of 2141 inhabitants—which is above half of the orig. number—in the small space of 17 years, may in some measure be attributed to the estab. of manufactories." B. of mort. were pub. in this city, and upon these Dr. Heysham, a resident, made very careful obs., especially during the nine years 1779 to 1787, both inclusive. In his obs. on the bill for the first-named year, he tells us:

Carlisle is situated in lat. 54° 55' north, and is surrounded by a wall about a mile and a quarter in circumference. The situation is rendered exceedingly pleasant by its vicinity to three beautiful rivers, with which it is almost surrounded, viz. the Eden, on the N.E. side; Petteral, on the S.E.; and Caldew, on the N.W. The air about Carlisle is pure and dry; the soil chiefly sand and clay. No marshes or stagnant waters corrupt the atmosphere; its neighbourhood to a branch of the sea and its due distance from the mountains on all sides render the air temperate and moderate.

In each of the following 8 years all the circumstances supposed to affect the health of the pop. are noted with great minuteness. In 1787 another survey of the inhabitants was taken; and Dr. Heysham tells us:—"From this survey, thus corrected, it appears that the two parishes of St. Mary and St. Cuthbert contain at present 3864 males and 4813 females, and consequently 8677 inhabitants."

In April, 1796, another survey of the pop. was made, under the direction of the Editors of the *Hist. of Cumberland*, and it appeared the two before-named parishes contained 1587 houses; 2616 families; 10,289 inhabitants.

In 1797 was pub., *An Abridgment of Obs. on the B. of Mort. of Carlisle for the Year 1779 to the Year 1787 inclusive. And also a Catalogue of Cumberland Animals.* By John Heysham, M.D.

CARLISLE TABLE OF MORTALITY.—The abridged B. of mort. of Carlisle for the 9 years 1779–87, by Dr. Heysham, M.D., fell into the hands of Mr. Joshua Milne; and they fell upon a fruitful soil. That gentleman entered into communication with their compiler, and in the end became satisfied of the accuracy of the recorded obs. On some of the points of his inquiries we shall have to speak hereafter. Mr. Milne reduced the materials before him down to the following form:

Table A.—Exhibiting the Pop. of the Parishes of St. Mary and St. Cuthbert, Carlisle, in 1780 and 1787.

Between the ages of	In the year 1780 in the		Total in both Parishes in		Increase during these 8 years.
	City and Suburbs.	Villages.	Jan. 1780.	Dec. 1787.	
0 & 5	859	170	1029	1164	135
5 „ 10	731	177	908	1026	118
10 „ 15	587	128	715	808	93
15 „ 20	543	132	675	763	88
20 „ 30	1030	298	1328	1501	173
30 „ 40	733	144	877	991	114
40 „ 50	729	129	858	970	112
50 „ 60	498	90	588	665	77
60 „ 70	375	63	438	494	56
70 „ 80	164	27	191	216	25
80 „ 90	44	14	58	66	8
90 „ 100	5	5	10	11	1
100 „ 105	1	1	2	2	—
Total ...	6299	1378	7677	8677	1000
Males.....	2817	674	3491	3864	373
Females...	3482	704	4186	4813	627

He constructed other tables. Table B. gave the numbers of husbands, wives, widowers, and widows at the enumeration of 1780. It showed the proportion of widowers to widows to be only as 1 to $4\frac{3}{7}$ nearly. Table C. showing the number of deaths that took place in each interval of age in the same two parishes during 9 years, beginning with 1779, and ending with 1787. Table D. regis. of the baptisms and burials in the parishes named. In each of the 9 years, except the first, there was an excess of baptisms. Some other tables were constructed, which it is not necessary for us to follow.

From tables A. and C. Mr. Milne constructed the following T., "except that between the ages of 100 and 105, the decrements of life are greater than they should be," according to formulæ which he had previously laid down :

Age.	Living.	Dying.	Expectation.	Age.	Living.	Dying.	Expectation.
0	10000	1539	38.721	53			18.972
1	8461	682	44.674	54			18.275
2	7779	505	47.546	55			17.580
3	7274	276	49.812	56			16.892
4	6998	201	50.757	57			16.209
5	6797	121	51.244	58			15.545
6	6676	82	51.163	59			14.918
7	6594	58	50.793	60			14.337
8	6536	43	50.240	61.			13.817
9	6493	33	49.569	62			13.311
10	6460	29	48.820	63			12.809
11	6431	31	48.038	64			12.299
12	6400	32	47.268	65			11.787
13	6368	33	46.503	66			11.271
14	6335	35	45.742	67			10.749
15	6300	39	44.994	68			10.225
16	6261	42	44.271	69			9.699
17	6219	43	43.567	70			9.174
18	6176	43	42.866	71			8.646
19	6133	43	42.163	72			8.156
20	6090	43	41.458	73			7.715
21	6047	42	40.749	74			7.327
22	6005	42	40.030	75			7.003
23	5963	42	39.309	76			6.690
24	5921	42	38.584	77			6.401
25	5879	41	37.856	78			6.111
26	5836	41	37.131	79			5.796
27	5793	45	36.403	80			5.507
28	5748	50	35.684	81			5.201
29	5698	56	34.993	82			4.928
30	5642	57	34.336	83			4.652
31	5585	57	33.681	84			4.390
32	5528	56	33.023	85			4.125
33	5472	55	32.356	86			3.895
34	5417	55	31.679	87			3.709
35	5362	55	30.999	88			3.595
36	5307	56	30.315	89			3.467
37	5251	57	29.633	90			3.282
38	5194	58	28.953	91			3.262
39	5136	61	28.274	92			3.367
40	5075	66	27.608	93			3.481
41	5009	69	26.965	94			3.525
42	4940	71	26.335	95			3.533
43	4869	71	25.712	96			3.457
44	4798	71	25.085	97			3.278
45	4727	70	24.454	98			3.071
46	4657	69	23.814	99			2.773
47	4588	67	23.165	100			2.278
48	4521	63	22.500	101			1.786
49	4458	61	21.811	102			1.300
50	4397	59	21.107	103			0.833
51	4338	62	20.387	104			0.500
52	4276	65	19.676				

Mr. Milne described his T. as "exhibiting the law of mort. at Carlisle." He gave the "expectations" in a separate T. We combine them for the sake of uniformity and space. He commenced his T. by showing the decrements of infants under one year of age as follows :

Age 0	Number who complete that age, 10,000, and die in next interval, 533.				
„ 1 month	„	„	9467	„	154.
„ 2 months	„	„	9313	„	87.
„ 3 „	„	„	9226	„	256.
„ 6 „	„	„	8970	„	255.
„ 9 „	„	„	8715	„	254.
„ 1 year	„	„	8461	„	682.

From this point the figures in our condensed form of T. run on as given by Mr. Milne.

His T. does not distinguish the mort. of the sexes. He says hereon, "The number of each sex not having been set down separately, when the numbers of the living in the several intervals of age were taken, I have not been enabled to determine the law of mort. for each, but only for the whole pop. without distinction of sex; this however is the less to be regretted, as the numbers when kept distinct for each sex would have been so small."

He explains the reading of his T. of Expectations thus :

It appears that the expectation of life at birth is 38.72 years; therefore in a stationary pop. subject to the same law of mort., and not affected by migration, 1 person would die ann. out of 38.72, or 100 out of 3872. This is upon the supposition of the ann. births being equal to each other, and invariable. But in a pop. that is increasing by procreation, the proportions between the numbers of the living in the several intervals of age will be different; therefore, although the law of mort. in each of those intervals remain the same as in a stationary pop., the total mort. may be different.

Again :

It appears that in a place subject to the same law of mort. as Carlisle, and which had for a century been increased by procreation only, in the same manner as England and Wales from 1710 to 1810—1 of 39.29, or 100 out of 3929 persons would die ann. And this would have been the mort. of Carlisle during the 9 years ending with 1787 had the pop. of the place been supplied by procreation only, and not migration. . . . It appears that the actual ann. average mort. of Carlisle during these 9 years was only 1 in 40—less than 1 of 39.29, which was shown in the last art. to result from the above hypotheses. The difference appears to have been the effect of migration; a great majority of the settlers having come in their youth, after surviving the period of infancy, and who, had the same number of inhabitants been kept up by procreation only, must have been the survivors of others, whose deaths at earlier ages would have augmented the general mort. In the 8 years ending with 1787, the increase by migration was 511; and the number of births in the same time 2071. The mort. must also have been reduced a little by some of the inhabitants, who had spent the early part of their life in the place, leaving it and dying elsewhere; for with the same number of inhabitants, if there had been no emigration, there must necessarily have been a greater proportion of aged persons, and therefore a greater mort.

Referring to the fluctuations shown in his column of "Expectations" between ages 89 and 96, he says :

There is a peculiarity in the expectations of life according to the *Carlisle* T. of mort. and that of M. Duvillard, which I have not found in any other. It appears by T. III. that the expectation of life at Carlisle comes to a minimum at the age of 91, where it is 3.26; it then increases until 94½, where it is 3.55, a maximum, and then decreases during the rest of life; but is not reduced so low as at 91 until after 97. . . . This may appear paradoxical, but I believe it is conformable to the course of nature. It appears to be supported by M. Wargentin's documents, . . . and the only reason why it is not shown in other T. seems to be, that in constructing them, it has been assumed none survived 100 years.

It is not to be understood from hence that according to the *Carlisle* T., a man of the age of 95 is likely to live longer than *the same individual* was at 91. But that out of the persons who attain to 91, those only survive 95, in whom all the powers of life are so exactly balanced, that they are calculated to live several years longer than the common average of those who survive 91; and if they could be selected from the rest at that earlier age, the expectation of life for these select lives would certainly be higher at 91 than at 95. The values of annu. on lives of the different ages above 85 or 90, calculated from these T., necessarily vary in the same manner.

The view here enunciated has, we think, been since confirmed in reference to some of the selected lives of the Gov. annuitants. [GOVERNMENT ANNUITANTS.] [MORT., LAW OF.]

It was in this careful manner that Mr. Milne guarded and weighed every point. His more general deductions on the law of mort. we shall speak of under MORT., LAW OF; and his views on the construction of mort. T. will be reviewed under MORT. T., CONSTRUCTION OF. Here is another instance of his minute care :

The practice of vaccination has produced so great a reduction in the general mort., that before we can compare that which has obtained of late in Carlisle, or throughout the kingdom, with the *Carlisle* T., we must determine what the general mort. in Carlisle would have been, in the 9 years during which Dr. Heysham's obs. were made, had none died of the smallpox; and then apply the corresponding correction. . . . By the T. of deaths of different diseases of Carlisle, it appears that in the 8 years to which that T. extends, the total number of deaths by smallpox was 238, of which number 225 were under 5 years of age, and 8 between 5 and 10. Although the T. of diseases for 1780 is lost, Dr. Heysham has fortunately preserved the information we want as to smallpox, by remarking in his obs. for the year 1787, that although 90 persons died of that disease in 1779, it produced only 151 deaths in the 8 following years. Whence it is evident that 241 persons died of it in the whole term of 9 years, and 3 only in the year 1780, which 3 we may safely presume to have been all under 5 years of age. . . . So that if none had died of the smallpox under 5 years of age, the numbers of the living, and of the ann. deaths in that period of life, would have been 10,439 and 635 respectively; . . . if there were no mort. from smallpox, about 1 of 43.53 would die ann.

Returning now to the extreme ages of the T., we find the following obs. in continuation of Mr. Milne's remark already quoted thereon :

Retaining 10,000 as the radix of the T., the decrements at the ages 100, 101, and 102 should all be greater than 1, but less than 2; after the age of 102, they should be less than 1; and the T. should in strictness extend beyond the age of 105; for although no person survived that age in Carlisle during the 9 years in which Dr. Heysham's obs. were made, there is no doubt but that some would have done

so (and the methods above referred to indicate they would), had the place for a century preceding that time consisted of a pop. of 387,239 persons, with 10,000 ann. births and the same number of deaths, according to the T.

The pop. of Carlisle is too small to afford a sufficient number of facts for determining the law of mort. with accuracy, after the age of 100; although those which Dr. Heysham has recorded, even at that period of life, agree very well with the Swedish obs. I have therefore assumed the ann. decrements after the age 100 as they appear in the T. somewhat arbitrarily, so as to fix the limit of life at 105 years. In consequence of this, the rate of mort. between 100 and 105 years of age, is greater according to this T. than it was obs. at Carlisle and in Sweden, but nearly the same as in the whole Kingdom of France, according to M. Duvillard.

In constructing T. of mort. it has always been found expedient to take some liberty of this kind in limiting them; for, with regard to the prob. of expectation, and the values of annu. depending upon them, it would answer no useful purpose to extend such T. to the age of 120 or 150 years, even if we had the necessary data; they have, therefore, hitherto been generally made to terminate about the age of 95 or 100 years. With regard to the purposes above mentioned, this limit appears to be liable to no objection, so far as these extreme ages only are concerned; because few persons would trust to any T. in treating for valuable interests depending upon lives so extremely old. But it has also the effect of sensibly diminishing these prob. expect. and values, even for all lives past 75 or 80, unless the rate of mort. be very considerable; and it is on this consideration that I have been induced to place the utmost limit of life in this T. so remote as 105 years from birth. [CENTENARIANS.] [LONGEVITY.]

Finally, Mr. Milne draws attention to the fact [sec. 745] that having regard to a variety of circumstances which he had already pointed out, it would be found that the rate of mort. in the two parishes which include that city and its environs had been nearly the same, during a period of 30 years, as throughout England: "So that although the Carlisle T. has been constructed from obs. made upon two parishes only, the law of mort. it exhibits probably differs very little from the general law that obtains throughout the kingdom, taking towns and the country together; if we except the children under five years of age, or at most those under ten." [Sec. 746.] He adds, in continuation:

The practice of vaccination has happily rendered this exception necessary; but lives so young as these are seldom involved in any questions respecting the values of life interests, and vaccination can have no sensible effect upon the law of mort. that older lives than these are subject to. Consequently the values of any interests depending upon lives above 5 or 10 years of age, as deduced from the *Carlisle T.*, will agree equally well with the true values, whether vaccination be practised or neglected.

Having completed his task, Mr. Milne reviews the results, and says:

Except the Swedish returns, these are, I believe, the only *data* derived from a fluctuating pop. that have been yet pub., which furnish the means of forming an accurate T. of mort.; the only objection to them which I can anticipate is, that the obs. were not longer continued, and made upon a larger body of people; they would certainly then have been more valuable; but I think I have shown good reasons for believing that the law of mort. *would not in that case have been found to differ materially from that which is assigned here.*

The moderate size of the place was indeed attended with some important advantages. Dr Heysham alone, to whom I am so much indebted for his liberal communications, was thereby enabled to satisfy himself fully on almost every point, and to give statements much more accurate and minute, than if he had been under the necessity of depending more upon the co-operation and reports of others, not taking the same interest in the inquiries, nor being so well qualified to prosecute them. On this account I have no doubt but that that gentleman's statements—so far as they extend—are much more correct than the Swedish. His valuable regis. of the diseases the deaths were occasioned by, have enabled me to show, not only at what rate, but through what channel, the stream of mort. flows at every age.

This *Carlisle T.* of mort. being the next in chronological sequence [founded upon a town pop. in Gt. Brit.] to the *Northampton T.*, it becomes of special interest to note points of difference between them. This may be best accomplished in a broad view by comparing the numbers out of 1000 children born the same year which each T. "expects" to be living at the end of every five years through life:

Out of 1000 born. Living at end of 5 years	By Northampton T.	By Carlisle T.	Difference
10 "	487	646	159
15 "	465	630	165
20 "	441	609	168
25 "	409	588	179
30 "	376	564	188
35 "	344	536	192
40 "	312	508	198
45 "	279	473	194
50 "	245	440	195
55 "	210	407	197
60 "	175	364	189
65 "	140	302	162
70 "	106	240	134
75 "	71	168	97
80 "	40	95	55

The difference amounts on an average to 33 p.c., or *one-third*: so that if a given sum were made payable to each of the 1000 lives included in the example, *one-third less money* would be required for the purpose under one Table than the other. This not only accounts for the difference between the expectation (and therefore the difference in the rates of prem.), but also for the enormous funds realized by some of the old offices using the Northampton T. The best age—that is, the age which shows the greatest expect. of life in the Carlisle T., is 7 years. In the Northampton T. it is at 8 years. The *Carlisle T.* gives the expect. at birth at 38.72 years. The *Northampton T.* at 25.18.

It is not at all surprising that a table constructed with such scrupulous care as we have seen, and yet furnishing results showing such marked differences in respect to a T. previously very largely employed, should have attracted much attention, and also have become the object of considerable criticism. We propose to pass briefly in review here the remarks of some of the leading writers upon it.

Mr. Milne himself was one of the first. Reviewing his own labours, in his art. on Annu. in the *Ency. Brit.* written 1816, he says: "It is to be regretted that the Carlisle obs. were only continued 9 years; . . . but the less so, since Mr. Milne had shown . . . that during the term of 22 years commencing with 1779, the proportion of the ann. average number of deaths to the mean number of the people was the same as in these first nine years, viz. that of 1 to 40." He further points out, as a fact to be kept in view, that while the pop. of the two parishes in Carlisle was only 8677, the obs. (as we have already seen) extended over a much larger number, as, for instance, the 1840 persons who had died during the 9 years, and also over those who had migrated and not returned. This, however, would be the case in all obs. made upon floating populations.

Mr. Finlaison said (1825), "The *Carlisle* T. were formed only upon the mort. of 1800 persons, of whom only 934 were adults; and though they are executed with the greatest ability, it appears to me that the data was insufficient."

Mr. Babbage said, 1826:

Although I do not feel satisfied that those T. [*Carlisle*] represent the law of mort. amongst a great and indiscriminate pop., yet from their near agreement with the largest experience of a select class [*Equitable* Experience] of which we have as yet any record, they will be adopted by some as the basis of their calculations.

Mr. Rankin said, 1830:

Mr. Milne has made the limit of life 105 years, and has calculated the expectations up to that age, exhibiting the striking anomaly of the expectation at 85 exceeding that of 89 years; and his annu. tables being calculated on the same basis, display of course the incongruity. It is true he notices this paradox, and that he reasons upon it; but his reasoning fails to satisfy my mind.

In 1831, Mr. George Farren pub. a work on the *Mort. of the Army*, and therein is contained an hypothesis deduced from the *Carlisle* T. of Mort. He says:

It has been supposed, and will now be satisfactorily proved, that human mort. follows a mathematical law. Let it be taken by way of hypothesis, that the rate continually increases in a geometric ratio, from the age of 10 or 12 years, to the end of life; in one geometric ratio up to the age of 55 (or thereabouts), in another and higher geometric ratio after that age. The first ratio makes the rate of mort. increase a little more than one-third every 10 years; the second ratio makes the rate a little more than double itself every 10 years. The *Carlisle* obs. (although so limited in time and number) obey this law; and will be confirmed by obs. on the mort. in different parts of the world; showing that the hypothesis will hold under different variations in rate resulting from climate and selection. [HYPOTHESES.]

Mr. Edmonds says, 1832, "That the *Carlisle* T. was ever a good measure of the mort. of the English pop. in general, no sufficient proof has been, or can be, adduced." And again: "I have assumed the *Carlisle* T. to represent Village mort., because it is a truth universally admitted, that the mort. in Villages is (in general) less than in Towns, or in the country at large; and because the *Carlisle* obs. express the lowest mort. ever recorded and detailed with accuracy."

In 1837 Mr. Alex. McKean, in his *Exposition of Practical Life Tables*, included tables showing the values both in money and stock, according to the *Carlisle* T., adapted to various rates of int. and various prices of stock.

Prof. De Morgan, in his *Essay on Prob.* 1838, says—"They [the *Carlisle* T.] are to be considered the best existing Tables of healthy life which have been constructed in England."

During the years 1840-1, Mr. David Jones prepared, and the So. for the Diffusion of Useful Knowledge pub., the work known as *Jones's Tables*. These contained an extensive series of Annuity and Life Ins. Values deduced from the *Carlisle* Mort. (as also from the Northampton Table) for single and for two joint lives and survivorships, at different rates of interest.

In 1841 Mr. Edward Sang pub. his Life Assu. and Annu. Tables—a most comprehensive Treatise [ACTUARIAL TABLES], all the values being based upon the *Carlisle* Table.

In 1841 Mr. Thomas H. Millar, in his *Practical Intro. to Life and Fire Ins.*, included a number of Tables, some of which were based on the *Carlisle* T. at 3 and 4 p. c.

Dr. Farr says, 5th Report Reg.-Gen. 1843: "I avail myself of this opportunity to pay my humble tribute to the framers of the *Carlisle* T.; to Dr. Heysham, who collected the facts with so much care, and to Mr. Milne, who cast these facts into a scientific form and applied them so judiciously to the purposes of life ins."

Mr. Arthur Morgan, while under examination by the Parl. Committee on Joint-Stock Cos. in 1843, in answer to a question as to the similarity of the *Carlisle* T. to the *Equitable* Experience T., admitted the general resemblance—but said:

There is one point in the comparison of the T. which I think appears also in the one recently pub. [*Experience* T. No. 1]; that, take any class of lives, we will say at the age of 30, and do not mix them, and carry down the obs. upon them, they do not agree with the *Carlisle* T.; they cover a much higher rate of mort., that is, a greater number die out of them. If you were to insure every person of the age of 30, and confine it to that, and take the prem. upon the *Carlisle* T., according to our experience you would not have the profit you anticipated.

In 1848 Mr. Thomas Wigglesworth pub. a little book on *Carlisle Probability*, contain-

ing Tables of the Logarithm of the Prob. of a life of any assigned age living to any other age, according to the experience of the *Carlisle* T. of Mort.

In 1849 Mr. H. E. Filipowski pub. in an appendix to his Logarithms, a Table of annu. for three joint lives at 3 p. c. *Carlisle* Mort. [2nd ed. 1851.]

In 1851 Mr. W. T. Thomson pub. a large sheet table, comprising annu. values at every age, based upon the *Carlisle* Mort. (See 1853.)

In 1851 Mr. Peter Gray, Mr. H. A. Smith, and Mr. W. Orchard, jointly pub. *Ins. and Annu. Tables*, based upon the *Carlisle* Mort at 3 p.c. The vol. included present value of annu. and single and ann. prems. for one life, with single and ann. prems. for survivorship ins. on every combination of two lives.

In 1852 Mr. Benj. Hall Todd pub. *Life Assu. Investigation Tables, showing the value of £100 pol. for any number of years (not exceeding 50) interpolated for months, according to the Carlisle T. and 3 p.c. int.: also ann. and single assu. prems., Carlisle T., 3 p.c. int., interpolated for months.* Mr. Todd says :

All recent obs., and the concurrent testimony of practical men, having tended to the adoption of the *Carlisle* M. T., and 3 p.c. int., as a sound basis for actual bus. trans., the author has founded his calculations upon these data. The *Carlisle* rate of mort., however, has been fixed upon for another reason, in add. to its having been proved by experience to be a correct T., viz. because Mr. Sang's valuable work has, to a considerable extent, framed the groundwork of the T. now presented.

In 1853 Mr. W. T. Thomson pub. in a vol. : *Actuarial Tables: Carlisle 3 p.c. Single Lives and Single Deaths, with Auxiliary Tables.* The author said in the preface :

To those actuaries who prefer another basis the work will still be useful as a means of comparison and reference; but so many T. have recently been calculated on the *Carlisle* obs., and so many actuaries acknowledge the soundness of that basis of life assu. and annu. calculations, that I look forward to the day when the *Carlisle* T. will be admitted as sufficiently accurate to justify their general adoption; . . . while the prospect of the money market as regards int. on investments make it advisable, in my opinion, to calculate on no higher than 3 p.c. return for any lengthened period.

In 1853 a Select Parl. Committee upon Assu. Asso. took the evidence of a number of actuaries, among whom were many of the most prominent of that period. Among the points touched upon were the merits of the respective T. of Mort.; and, as may be supposed, a very wide diversity of opinion was manifested. Regarding the *Carlisle* T., there was the following testimony, which we take in the order the witnesses were called :

Mr. John Finlaison : "With respect to the *Carlisle* T., I believe it is only lately that they have come into operation with the offices : formerly it was the *Northampton* T. that was adopted, which was much more beneficial to the assu. cos." (641). Again, "I hold (and with very good reason, knowing quite as much of the matter as any living man) that the *Carlisle* T. somewhat underrates the mort.; it shows therefore a greater advantage than would be experienced by a life ins. office." (662).

Mr. T. R. Edmonds said : The T. of Mort. used by his Co. was that known as "Mean Mort." calculated by himself, "The mort. of that T. is 20 p.c. greater than the mort. of the *Carlisle* T. at every age." . . . "Then is it your opinion that the *Carlisle* T. is 20 p. c. too favourable? Yes; for lives that have been long assured. The *Carlisle* T. represents fairly the mort of lives assured less than 10 years." (1231-4).

Mr. Charles Jellicoe—"Do you happen to know amongst the offices generally, or in particular offices, the T. they use with reference to the rates of mort.?—The *Carlisle* T. is very commonly used." (2152).

Mr. E. J. Farren : "The *Carlisle* T. is irregular at certain ages; in fact in that respect it is a badly constructed T." (2690).

Dr. Farr, in 12th Rep. of Reg.-Gen., 1853, says :

The *Carlisle* T. was deduced from two enumerations of the pop. of the parishes of St. Mary and St. Cuthbert, Carlisle : the first in Jan., 1780, when the inhabitants were 7677; and the second in Dec., 1787, when the inhabitants amounted to 8677, namely, 3864 males, and 4813 females. The deaths in the two parishes were 1840, males 881, females 959, in the nine years 1779-1787. It is now well estab. that the mort. in towns is understated at the age 15-35, when they are entered by healthy immigrants from the country, of whom many reside while they continue healthy in comfortable "situations" as domestic servants, and when they are attacked by consumption return to the country to die. The fact that the females in these parishes exceeded the males by nearly 1000, and the great excess in the number of persons (1501) of the age of 20-30 over those in the town of the age 30-40 (991) indicate the character of the pop. with tolerable distinctness. Some of the irregularities in the graduation of the *Carlisle* T. may be referred to the limited extent of the obs.; for the deaths in each decennial period (20-90) only ranged from 89 to 173 in number.

A writer in Harvey Tuckett's *Monthly Ins. Journ.* pub. in Philadelphia in 1853, says :

In the U.S. the *Carlisle* T. at 4 p.c. int. has been almost invariably used as that upon which the true or net prem. is calculated; therefore, as regards the insurer, all are equal in reference to the basis. In those cos. charging the full prems., or 2'36 dol. at 30 years of age, the "marginal add." is 33½ p.c. added, or 25 p.c. discounted. . . . [See 1864.]

In 1855 there was pub. in the *Assu. Mag.* [vol. v., p. 363, etc.] *Tables of single and annual prems. for Joint Life Assu. for all ages between 15 and 60, Int. 3 p. c.*, deduced from this table by Mr. Wm. Braid, of Edin. We believe the tables have never been pub. separately. And in the same year [*Assu. Mag.* vol. vi. pp. 115-120] a series of Tables *For determining the Values of Annuities and Assu. on Three Lives according to the Carlisle T.*; and also another T. *Showing the values of £1 p.a. during the joint continuance of 3 lives, and till the decease of the longest liver, Carlisle 3 p.c.* These Tables were also calculated by Mr. Wm. Braid, and have not been pub. in any other form.

In 1856 appeared the art. "Ins." in the 8th ed. of the *Encyclo. Brit.* The portion of the art. relating to Life Ins. is from the able pen of Mr. W. T. Thomson. He says therein :

The *Carlisle T.* has to a great extent superseded the *Northampton T.* Most of the offices estab. before Mr. Milne's work was pub. proceeded on the Northampton data, and still do so, being prob. deterred by the complexity of a change; but the great mass of offices now adopt the sounder data of Milne; and those which do not, proceed on T. very similar, such as the *Chester*, the *Equitable Exp.*, the results of the combined experience of various life offices pub. in 1841, or the T. of the Reg.-Gen. The only real objection which can be taken to the *Carlisle T.* is, that at some ages it is very badly graduated, so that particular results are somewhat anomalous. Instance the assurance for one year, at the following ages :

Age.	Single Prens.	Age.	Single Prens.
45.....	£4377	49.....	£3284
46.....	£4385	50.....	£3027
47.....	£4178	51.....	£3876
48.....	£3529	52.....	£4758

But notwithstanding this irregularity, it is very generally admitted that all subsequent obs. have proved the accuracy of its results, and the best proof of this prob. is, that all the auxiliary T. pub. for many years have been founded on the *Carlisle data*. We admit that it would be possible to have a more satisfactory T.; but it is as near the truth as we will prob. ever reach—sufficiently near for any practical purposes; and the immense mass of tabular matter which has been computed and arranged on its basis, must always keep it in the first place as the foundation of assu. calculations.

In 1857 Mr. W. E. Hillman pub. *Tables of the value of a Pol. of Ins. for £1 according to the Mort. indicated by the Carlisle Obs.*, etc. For some important details regarding these T., see ACTUARIAL T.

In 1858 Mr. David Chisholm pub. his *Commutation Tables for Joint Annuities and Survivorship Assu.*, based on the *Carlisle mort.*, at 3, 3½, 4, 5, and 6 p. c. int.; with *Tables of Annu. and Assu. on Single Lives*, and other useful T. The author says :

They have been computed on the *Carlisle basis*, as being understood to be that most generally used by L. assu. offices. And though this basis has been held by some act. not only to be limited in extent, but somewhat imperfect in arrangement, there is reason to believe, nevertheless, that in its general features the *Carlisle T.* gives a sufficiently accurate representation of the law prevailing amongst the majority of asso. for L. assu., and that the corrections which future experience may show to be necessary will not be of a very important description.

In 1860 Mr. A. G. Finlaison pub. his *Report on the Mort. of the Gov. Life Annuitants*, wherein he says :

The *Carlisle T.* is another standard of value, which for many years past has been widely used in valuing L. interests, and among them that most important class which relates to the engagements of L. assu. sos. The T. itself is a specimen of ingenious deduction from very slender and unpromising materials, and is in the highest degree, in one sense, a proof of the talents of its most able author, Mr. Joshua Milne. But its foundation was so limited that all the deaths of both sexes above three years of age did not exceed 1149 in number. While its radical defect is that in its constituent elements the female sex greatly predominated in number over the males, although only one general T. for both sexes is deduced from the data. . . . For the valuation of reversionary liabilities in L. ins. offices where the sums assured are almost all upon the lives of males, the *Carlisle T.* is obviously unfit. Whether it is applicable to the sale of annu. on the lives of persons of either sex indiscriminately, a mere comparative reference to the expectation will decide in the negative. For as a measure of value . . . it applies strictly neither to the case of males nor females.

In the able paper by Mr. A. H. Bailey and Mr. A. Day, *On the rate of mort. prevailing amongst the families of the Peerage during the 19th century*, which appeared in vol. ix. of *Assu. Mag.*, we note the following :

Finally, if this investigation should tend to encourage the belief that the mort. of each well-defined class has peculiar characteristics of its own, it must weaken the hold that the *Carlisle T.* has upon some of its votaries, who seem to consider that for all purposes, and under all circumstances, their favourite T. is applicable.

Mr. J. A. Higham, in his excellent paper, *On the Value of Selection as exercised by the Policy-holder against the Co.*, pub. in vol. i. of *Assu. Mag.*, 1851, declares : "The *Carlisle T.* through its whole extent is of no authority, and at the extreme ages is useless and absurd. The numbers (he continues) on which it is founded are so small, that it owes its popularity entirely to the accident that it happens to agree pretty nearly with other obs."

In 1861 the first ed. of Mr. W. Downing Biden's *Tables* was pub. He says therein :

The life T. in this book are chiefly based on the *Carlisle T.* of mort., because, although open to some objection, it has been of late years very extensively adopted by valuers and assu. offices; and differing but slightly in its general results from other and more recent T. of mort., it has the sanction of use and the prestige of public favour.

In 1863 Mr. Jardine Henry submitted to the Inst. of Act. a paper, *On the relation of the Carlisle T. to the Gov. and Reg.-Gen., and other T. of Mort.* A brief abstract of it will be found in the *Assu. Mag.* [xi. p. 89], from which we take the following :

The *Carlisle T.* of mort. was then considered, and the grounds upon which a great amount of reliance has been reposed in that T. were stated. The T. of the experience of the *Equitable So.* was also referred to, and the true relation in which it stands to the *Carlisle T.* in the respective elements of both was discussed. A comparison was also made here between the expect. of life of the persons in the Government T. and the *Carlisle*, and a T. which showed the difference to be quite immaterial was subjoined.

In the Report of the New York Ins. Department, 1864, we find the following regarding the *Carlisle Table* :

Though somewhat defective in graduation, it is far more satisfactory than the *Northampton T.* in

its approach to accuracy; for which reason it is extensively used in England, and very generally in this country. Although first pub. in 1816, it appears better adapted to the mort. of American life, than some later T. of more refined construction; and as an extensive system of convenient T. for the use of actuaries has been constructed on its basis by David Jones of London, and also by David Chisholm (the latter particularly remarkable both for convenience and elegance), it will probably long remain a favourite mort. T. for this country. The following cos. transacting bus. in this State base their rates of prem. upon this T. of mort. with int. at the rate of 4 p.c. p.a.:—*New York L.*; *Manhattan L.*; *Knickerbocker L.*; *North American L.* (for L. ins. pol.); *Mutual Benefit L.*; *Connecticut Mut. L.*; *Charter Oak L.* (with profits; 5 p.c. without profits); *Phoenix Mut. L.*; *Union Mut. L.* The *Liverpool and Lond.* bases its L. prems. upon this T., with int. at 3 p.c. for *non-bonus*, and at $4\frac{1}{2}$ for *bonus* pol.; and at $3\frac{1}{2}$ p.c. for annu.

Mr. Huie, in his clever little book, *The Valuation of Widows' Funds*, published 1868, says:

In the *Carlisle* T. there is no distinction between the sexes, and this is a serious drawback to its employment in the valuation of widows' funds. It is, however, the T. with which actuaries are most familiar, and notwithstanding its faults and imperfect graduation in the centre, and excessive attenuation at its close, it is likely to continue to be the most extensively employed, if for no better reason, at least on account of the immense amount of tabular matter based upon it, embracing calculations of nearly every description. All experience also goes to show that it is upon the whole a very fair exponent of the general mort. of the country.

In 1870 there was pub.: *The Life of John Heysham, M.D., and his Correspondence with Mr. Joshua Milne relative to the Carlisle B. of Mort.* This work is reviewed in the *Assu. Mag.* [vol. xvi. p. 221]. The reviewer says: "The main hist. of the work centres in the origin and hist. of the *Carlisle* T.—a T. prob. still more in use by the L. Assu. Cos. of England and America than any other single table whatever." Again, "The extreme accuracy of Mr. Milne's T. has been strikingly shown by the calculations of Mr. Benj. Gompertz, F.R.S., the results of which were pub. in the *Phil. Trans.* in the year 1825."

Mr. W. P. Pattison, in his report upon the affairs of the *Commercial Union* in 1868, says:

The *CARLISLE* T., I am aware, has been very widely adopted by cos. in their valuations; and I observe that Mr. Thompson, the Act. of the *Standard*, has recently stated that his Co. had adhered to this T. for 30 years, and that the leading offices had, one by one, been led to adopt it. I venture, however, to predict that, one by one, those offices which have accepted it as the basis of their calculations will reject it (as an *unsafe* T.) when they find the new business in smaller proportion to the existing business at future valuations.

We have now mentioned all the leading works, and authorities, owing their existence to, or commenting upon the *Carlisle* T. of Mort. Some minor ones, which we have omitted here, will be found noticed under ACTUARIAL TABLES.

CARLSCRONA [or Karlscrona].—A seaport town in Sweden. A fire broke out here in 1790, and destroyed 1087 houses, 2 churches, all the warehouses and merchants' dwellings except two.

CARLSTAD, in Sweden.—A fire here in 1865 destroyed the entire town, except the Bishop's residence, the hospital, and the jail. 5000 persons were left without homes. But few lives were lost.

CARMENT, DAVID, F.I.A., selected in 1872 to fill a position on the actuarial staff of the *Australian Mut.*; he was trained to the bus. in the *North Brit. Mercantile*.

CARNEGIE, J. D.—Resident Sec. for *City of Glasgow* Ins. Co. in Dublin since 1867, was previously engaged in banking in the South of Ireland, and in Lond.

CARPENTER, WILLIAM, journalist, author, and promoter of Ins. Cos.—Amongst the cos. he promoted were the following: 1852, *English and Foreign*, first regis. as *English and Colonial*, in which he held the office of managing director. In the same year he regis. *British Colonial and Foreign*. He pub. in 1860, *The Perils of Policy-holders, and the Liabilities of Life Offices*: a letter addressed to the Right Hon. W. E. Gladstone, Chancellor of the Exchequer. In the same year, Mr. Carpenter launched and edited a very creditable periodical: *The Policy-holder*, which however did not renew its existence after the first year. In 1862: *Perils of Policy-holders*, Letter No. 2. Some amusing correspondence passed between this gentleman and the editor of *Post. Mag.*, which will be found in the pages of the last-named journal.

CARPENTER'S OR BUILDER'S PRIVILEGE [FIRE].—The privilege granted to the insured to employ carpenters or builders in building or repairing property insured, or containing property ins. The term is used chiefly in the U.S.

CARPENTERS AND JOINERS.—In 1851 there were 133,675 males of 20 years and upwards following these occupations in England and Wales; of whom 2604 died in that year: thus indicating a mort. slightly higher than the average for males. Their mort. to 1000 living at each of the decennial ages was as follows: between ages 25 and 35, 9; 35-45, 10; 45-55, 17; 55-65, 30; 65-75, 66; 75-85, 143; 85 and upwards, 331.

CARPETS.—The following, headed "Carpet Risks," is from the pen of the humorous ed. of the *New York Underwriter*:

It is credibly asserted that half the diseases which affect modern humanity are to be attributed to carpets. Carpeted rooms, constantly occupied, contain millions of particles of hair cuticle, epithelium ovules, fungi, and other organic matter, which, set in motion by the trailing skirts of the women, make the air alive with infection, and fill our nostrils and lungs with the seeds of everything horrible.

Although written half in earnest, half in jest, it contains the element of truth. Our continental neighbours avoid such risks.

CARPHIN, J. RHIND, Man. of *Scottish Fire* since its commencement in 1864. Mr. Carphin, in common with many other man. of Scotch ins. asso., was trained to the profession of accountant. In 1861 he became Man. of *Brit. Guarantee Asso.* On the trans. of the bus. of that Co. to the European in 1862, Mr. Carphin remained Man. in Scotland until 1864, when he accepted his present appointment.

CARR, THOMAS, F.I.A., on the actuarial staff of the *Lond. Assu. Corp.* since 1857. Mr. Carr entered the *Asylum L.* in 1847; and filled the position of "Mathematical Calculator" there, on the retirement of Mr. J. E. Farren. We believe it was mainly owing to his candour that the real position of that Co. was ascertained in time to save the pol.-holders. On the bus. of the *Asylum* passing over to the *Lond. Assu.*, Mr. Carr followed. He has made the works of the early writers on the subject of Life Contingencies and the theory of Probabilities his especial study. In 1857 he pub. a pamp., *A Brief View of the Works of the Earlier Eminent Writers on the Doctrine of Life Contingencies, Remarks on the Practical Application, by Aid of the Theory of Prob., of General Deductions from Statistics.* In the same year he contributed to the *Assu. Mag.* a letter, *On the Value of Rev. Annu. payable Half-Yearly or Quarterly* [*Assu. Mag.* vii., p. 109]. In 1868 he contributed to the same pub. another letter, *On the Value of a Pol. on the Longest of Two Lives* [*Assu. Mag.* xiv., p. 415]. In 1869, to same, a letter, *On the Formulae in the Calculus of Finite Differences.* In 1872 he contributed to the *Ins. Record* a paper in the shape of a letter, *Measure of the Claim of a Pol.-Holder on a Compulsory Winding-up.* We expect other contributions from the same pen.

CARRIAGE ACCIDENT INS. CO. (No. 1).—This Co. was founded in 1857, for the purpose of ins. carriages and other vehicles against injury by accident. It died out almost before it had commenced operations.

CARRIAGE ACCIDENT INS. CO. (No. 2), founded in 1869 by Mr. William Baker. The scheme of this Co. was very well conceived; but the practical difficulties in the conduct of the bus. led to its abandonment when all was ready for a start. Its pol. contained the following prudent condition:

The Co. will not be answerable for any injury or damage by fire, nor for any injury or damage which may occur by reason of any other than the ordinary use of any carriage or vehicle for pleasure or business; nor for any damage occurring in the stables or outbuildings of the insurer. And the Co. will not be answerable for any damage or injury to carriages or vehicles going to or coming from races, nor for any wilful damage to carriages or vehicles, nor for any damage done by kicking or vicious horses.

CARRIAGE ACCIDENT INS. CO. LIM. (No. 3).—This Co. was founded in 1870, with an authorized cap. of £10,000, in 2000 shares of £5. The prosp. said:

This Co. ins. carriages of every description against accidents of all kinds (fire excepted). The liability to damage, from collision and other causes, incurred by vehicles of every kind, is well known to be most considerable, statistical records proving that as many as 7000 accidents occur ann. in and around Lond. This Co. has therefore been estab. for the purpose of affording to owners of carriages the means of ins. against the losses occasioned by the above-mentioned contingencies, and which so often entail such heavy outlays to owners of this description of property. The assu. will be relieved from the trouble and annoyance, which is usually very considerable, of suing the wrong-doer in the event of damage being caused by the carelessness or negligence of other parties. The advantages offered to insurers combine a low scale of prems. together with a prompt and liberal settlement for all claims for loss and damage.

The following is the scale of prems.: Carriages, etc., not exceeding £25 in value, 5s. p.a.; £50, 10s.; £75, 15s.; £100, 20s.; £125, 25s.; £150, 30s.; £175, 35s.; £200, 40s. Carriages of higher value according to arrangement.

It turned out that these prems. were in many cases very insufficient. As a consequence a revision of rates took place. The Co. was reconstituted, and is now carrying on bus. as the *Carriage Ins. Co.*, which see. Mr. E. H. Wilson promoted the Co.; Mr. T. R. Eames was Man. Director.

The *Ins. Monitor* of N.Y. grew facetious in reviewing the prospectus of this Co. It described it as "a sort of dry-land marine ins.," intended "to cover everything, from a wheelbarrow to a coach, in cases of collision."

CARRIAGE ACCIDENTS, INS. AGAINST.—The ins. against the accidental injury, or destruction, of carriages—by which, in its wide sense, is meant all conveyances public and private, travelling upon wheels—has opened up a new, and at the same time very useful branch of ins. enterprise. It is impossible to say how many such vehicles there are in Gt. Britain, because we believe all carts, vans, etc., used simply for the purposes of trade, are exempt from duty: and hence their owners are not called upon to take out any license in respect of the same.

The first chariot is said to have been produced by Erichthonius of Athens, about 1486 B.C. Rudely constructed carriages were known in Western Europe 3000 years later—in France A.D. 1547; in England 1555. It would be curious to trace the development of this branch of manufacture; but this is not the place to do it. From the Reports of the Commissioners of Inland Revenue we are enabled to construct the following T. of Duty-paying vehicles; but what proportion these bear to the whole we cannot say.

Return of Carriage Licences for the years 1868-9-70.

Description of Vehicle.	Number of Licenses.		
	1870.	1869.	1868.
Less than four wheels drawn by 1 horse ...	198,790	194,725	188,788
Ditto 2 or more horses	198	189	197
Four wheels 1 horse	91,127	88,599	86,002
Ditto 2 or more horses	35,209	34,461	34,039
Common Carriers	6,973	6,880	6,963
Totals	332,297	324,854	315,989

Hence the number is steadily increasing.

The bus, while new in England, has long been practised in France. The severity of the Code Napoléon in regard to all persons causing injury to others, induced the owners of vehicles in France, and especially in Paris, to seek ins. as a means of indemnity. When the First Carriage Ins. Co. was founded there we cannot ascertain with precision, but prob. about 1840. In 1846 there were existing the following Cos. in Paris: 1. *L'Automédon*, 2. *La Parisienne*, 3. *La Prévoyance*, 4. *La Seine*.

In 1843 a case was tried in Paris in which a proprietor of public carriages had injured two children by driving against them. He reported the accident to the Co. *La Parisienne*, in which he was insured against accidents caused by his carriages or servants, and the Co. promptly offered help. But the parties injured appealed to the law; and it appearing that the accident was caused by the carelessness of the driver, he was sentenced to 15 days' imprisonment, a fine, and £100 damage to the parties injured. This last the Co. declined to reimburse him; but after some litigation was finally condemned to pay him the £100 with int. and costs.

Whether it is in consequence of the indifference caused by the drivers or proprietors of the Paris carriages being indemnified, or from other causes, we cannot say; but it is certain that the number of "Accidents de Voiture" in Paris is increasing much more rapidly than the increase in the number of vehicles would appear to justify—although that increase has been considerable. Thus in 1853 the official returns gave the number at 502; by 1861 they had increased to 909; and for 1871 they are returned at 3000. The number of breakdowns in London is estimated at 7000 ann. A great proportion of the accidents arise from circumstances beyond the control of the owner, or driver, viz. by reason of the careless driving of others; and from runaway horses.

The simple method of a uniform rate for all kinds of vehicles, as set forth in the early prospectus of the *Carriage Accident Co.* of 1870 very speedily gave way to a more systematic classification, as shown in the prosp. of the *Carriage Ins. Co.* 1872. The fact is the "moral hazard" in this branch of bus. is very great; and the secret in the management here, as indeed in most branches of ins., is what to avoid rather than what to accept. The bus. is growing; and experience is being gained, and being paid for.

It is in contemplation to issue a "compound pol.," ins. carriage, horse, and driver. If this can be accomplished, it should popularize the bus.

The chronology of carriage ins. is:

1857—Carriage Accident Ins. Co. (No. 1), estab., but did not proceed.

1869—Carriage Accident Ins. Co. (No. 2), also estab., but did not proceed.

1870—Carriage Accident Ins. Co. (No. 3), founded a bus. and passed into

1872—Carriage Ins. Co., carrying on a progressive bus.

CARRIAGE INS. CO. LIM., founded in 1872, with an authorized cap. of £50,000 in shares of £1. The Co. is in fact a reconstitution of the *Carriage Accident Co.* (No. 3). The prospectus says:

The number and nature of accidental injuries occurring to vehicles of all kinds have been found to come within the law of average, and therefore to be as capable of being provided for, by means of assu., as casualties to life or limb, damage by fire, or loss by storm, etc., at sea.

2. The peculiar liability of carriages to injuries arises as a rule from causes beyond the control of the owners. The most steady servant, the most experienced and careful driver, cannot at all times protect the vehicle he is driving from the continual danger of being run into by the sheer negligence or incapacity of people in charge of other conveyances; and as this forms one of the most serious risks to which owners of light vehicles are exposed, it is also in this respect that the Co. offers the greatest advantages, and one of the strongest inducements to the proprietors of carriages to place themselves under its protection.

3. The experience of several years has proved that a very large number of vehicles of all descriptions, both private and commercial, annually receive damage through accidental causes, involving in the aggregate a very considerable outlay of money for the necessary repairs, and entailing as a consequence, a proportionate loss on those persons, who, for the purposes of business or pleasure are compelled to make use of vehicles. It is for the protection of such that this Co. has been estab., and it has been proved by actual experience that by a properly arranged system of average and classification of risks, this kind of ins. can be made as sound and secure as any other.

4. It especially falls within the scope of this Co. to save all owners of vehicles the trouble, expense, and annoyance of suing the wrong-doer in case of accident; it fully indemnifies the person sustaining the injury; undertakes the supervision of all the requisite repairs; and, by the aid of its inspectors, guarantees that such repairs shall be thoroughly, promptly, and efficiently executed.

5. The Co. insures against accidental injury to carriages of every description, and whether the property of private owners or of livery stable keepers, including dog-carts, wagonettes, cars, gigs, buggies, etc., and also light carts, and the various vans used for trade purposes; also in provincial towns and in the country generally, cabs, flies, and omnibuses, but such risks are not undertaken in Lond. and some of the larger towns in the provinces.

6. All vehicles must be insured *to their full value*, otherwise, in the event of damage, the co. is liable for such proportion only of the claim as the amount insured bears to the actual value.

The following is the classification of risks—

Class 1.—Four-wheel vehicles used for private purposes only, and not being the property of livery stable keepers or fly proprietors. Rate £1 p. £100—lowest sum ins. £50, highest £200, on any one carriage.

Class 2.—Two-wheel vehicles, with the same exceptions as Class 1. Rates £2 p. £100—lowest sum ins. £50, highest £100.

Class 3.—Vehicles used by medical practitioners, livery stable keepers, or fly proprietors, for professional or business purposes. Rates £2 10s. p. £100—lowest sum ins. £50, highest £100.

Class 4.—Carts and other vehicles used for trade purposes. Rates £3 p. £100—lowest sum ins. £25, highest £100.

Other vehicles according to special arrangement.

Mr. Wm. Smith is Man. Director ; Mr. W. A. Bruun, Sec.

CARRICLE [or CARRACLE].—A ship of great burden.

CARRIERS [COMMON CARRIERS] AS INSURERS.—The term Carrier in its general sense signifies a person who undertakes to transport the goods of other persons from one place to another for hire. It is not, however, every person who undertakes to carry goods for hire that is deemed a common carrier. To bring a person within the description of a common carrier, he must exercise it as a public employment. He is a public servant, and is bound to carry, and is responsible for every injury occasioned to the goods by any means whatever, except only the act of God or the Queen's enemies ; and consequently is so for accidental *Fire*. This is as to carriers by land. As regards carriers by water, apart from the common stipulation which they make in charter-parties and bills of lading against this liability, they are really relieved from it by 26 Geo. III. c. 86 (1786), sec. 2 of which enacts that no shipowner shall be responsible for any loss which shall happen to any goods or merchandize by any fire on board his ship. This stat. has been held to apply only to fire on board the ship, and not to a fire on board a "lighter," in which the goods were being taken to the ship.—*Bunyon*. [See *Morewood v. Pollock*, 1855.]

The liability of carriers by land is limited by the *Land Carriers Act*, 11 Geo. IV. & 1 Wm. IV. c. 68 (1830). Of this Act we shall have occasion to speak more particularly under PARCELS INS.

By the *Railway and Canal Traffic Act*, 1854 (17 & 18 Vict. c. 31) there is provided a limitation as to damages for loss or injury to certain animals, viz. for any horse not more than £50 ; for any neat cattle per head not more than £15 ; for any sheep or pigs per head not more than £2 ; unless the person sending or delivering the same to the Co. shall at the time of the delivery have declared them to be of higher value ; and paid the extra rate or prem. demanded in consequence.

By the 28 & 29 Vict. c. 94, s. 1 (1865), it is enacted that the term "lace" included in the first-named Act shall not include machine-made lace.

The liability of the carrier is for the actual loss or damage, from whatever cause, as fire, flood, thieves, etc. It is not well estab. that he is liable for consequential damages, or even delay except when to a very aggravated extent.

A carrier is not liable for goods burned in his warehouse, where they were left for the owners to take away when they pleased, being left there after notice of their arrival in the carrier's custody. This was held in the case of *Wilkinson v. Coverdale*, 1793.

A carrier was held at Common Law to be an insurer of the goods which he carried ; he was obliged for a reasonable reward to carry any goods to the place to which he professed to carry goods, which were offered him, if his carriage would hold them, and he was informed of their quality and value ; he was not obliged to take a package, the owner of which would not inform him what were its contents, and of what value they were ; if he did not ask for this information, or if, when he asked and was not answered, he took the goods, he was answerable for their amount, whatsoever that might be ; he might limit his responsibility as an insurer by notice, but that notice would not protect him against the consequences of a loss by gross negligence. See *Macklin v. Waterhouse*, 1828 ; and *Riley v. Horne*, 1828. [PARCELS INS.]

In the case of *Lond. and N. W. Railway Co. v. Glyn* (Chairman of *Globe Ins. Co.*), which arose in 1859, the facts were as follows : The railway co. had effected an ins. against fire, by which the sum of £15,000 was ins. "on goods their own, and in trust as carriers," in a warehouse. One of the conditions of the pol. was that "goods held in trust or on commission are to be ins. as such, otherwise the pol. will not extend to cover such property." Held, that the words in the pol. "goods in trust as carriers" covered the whole value of goods sent to the carriers to be carried, and also any interest they might have in them for their lien as carriers, and also that the goods were properly described. It was held in the same case that the carriers could recover for goods destroyed by fire, for the loss of which they themselves were not liable under the Stat. 11 Geo. IV. & 1 Wm. IV. c. 68.

Mr. Justice Montague Smith, in the case of *Taylor v. Gt. Northern Railway* (1866), laid down the law as follows :

No doubt a common carrier is an insurer, to the extent that the goods shall be delivered safely and securely, but there is no authority for holding that he insures their arrival at any particular time, or according to any usual course of delivery. He is bound to deliver them within a reasonable time, and the usual course of delivery would in most cases be *prima facie* evidence of what is reasonable time; but must depend on all the circumstances of the particular transaction as to what is a reasonable time. His duty is to convey the goods within a reasonable time without unnecessary delay; but it may be necessary, in order safely to deliver, to make a delay, or even to deviate, and if the delay and deviation are necessary for that purpose, then delay or deviation may be incurred, and the delivery of the goods may be retarded without any responsibility being cast on the carrier to make good the loss occasioned by the delay. See also *Raphael v. Pickford*.

The liability does not extend to goods left at cloak rooms; for they do not receive them there in the capacity of common carriers.

Perhaps we ought to state also that the liability of which we have spoken does not apply to passengers either, for the simple reason that the carrier has not the same control over persons which he has over goods; nor the same opportunities of abuse and misconduct, the apprehension of which gave rise to the rigorous law we have explained; and therefore the law has never imposed upon the carrier the responsibility of being an insurer of passengers. "The undertaking of a carrier of passengers (says Mr. Justice Story), is not an undertaking to carry safely, but only to exercise due care and diligence in the performance of his duty." A more recent writer, Saunders, on the law negligence, (1871) says:

There is neither a warranty by way of ins. to convey the passenger safely to his journey's end, nor a warranty that the carriage in which he travels is in all respects perfect for its purpose; that is to say, free from all defects, whether patent or latent, likely to cause peril; the only undertaking being *to take due care* (including in the term skill and foresight) to carry the passengers safely. [CAMPBELL'S ACT.]

As regards the immunity from liability for injury arising from the act of God, such damages are to be included as arise from such uncontrollable phenomena as, without being necessarily either supernatural or preternatural, arise from such an interruption of the ordinary course of nature as a prudent and an honest man cannot reasonably be expected to provide against or anticipate. By inevitable accident, commonly called the act of God, is meant any accident produced by any physical cause which is irresistible; such as a loss by lightning or storms, by the perils of the sea, by an inundation or earthquake, or by sudden death or illness.—Story, *On Bailments*. Lord Mansfield defined the act of God to mean something in opposition to the act of man, such as could not happen by the intervention of man, as storms, lightning, tempests. [NEGLIGENCE.] [PARCELS INS.] [TRANSPORT INS.]

CARTEL SHIP.—A vessel commissioned in time of war to exchange the prisoners of any two hostile powers; also to carry any particular proposal from one to another. For this reason the officer who commands her is particularly ordered to carry no cargo, ammunition, or implements of war, except a single gun for the purpose of signal.

CARTER, FRED. H., was Man. and Sec. of *Scottish Friendly Life* from 1863 down to 1866.

CARTER, R., a great projector of annu., assu., and widows' and orphans' funds towards the close of the 17th century. We shall allow him to proclaim his own doings, as he does pretty effectively in a "Proposal" for settling a *Perpetual Assu. on Lives, and for advancing the Credit of £10 Lottery Tickets*, which he put forward in 1712. He says:

That the proposer being the first person that ever put into practice anything in this nature to make provision for widows or orphans, as that office set up in Aldermay-churchyard in the year 1696 by a mutual contribution of 5s. on each death; from whence it gave birth to that of Racquet-court, which they unjustly took from this proposer's project (although they have made ill use of it for want of honesty and right management); and likewise that of the *Mercers Co.* for granting annu. of £30 p.a. in consideration of advancing £100 ready money, provided the woman outlived her husband; which same proposal was made by the proposer in the year 1698, in a petition to the late King William; and a reference thereon was had, as may appear under the hand of the Hon. James Vernon, Esq., then Chief Secretary of State, attending the Council. All which being true in fact, it is not doubted but that Her Majesty will be graciously pleased to grant her Letters Patent to the proposer, and such others concerned with him, to incorporate them in a co. or so. as being the first contrivers of such methods, which by experience have been found to be advantageous to Her Majesty's subjects, and a support to many families who otherwise by their friends and parents might be left in penury and want. [Orig. Brit. Museum.]

He says later that he claimed a right or patent within the meaning of the Act of Parl. for *new inventions*.

CARTER, W. H., Solicitor, Woolwich, projected several ins. cos., among them, in 1852, *West Kent*; in 1853, *Home Counties Life and Fire*.

CARTHAGE, founded on the north coast of Africa, near Tunis, about 878 B.C. It became a great commercial and warlike republic, and disputed the empire of the world with Rome, which occasioned the Punic wars. It is regarded as certain that the Carthaginians practised **BOTTOMRY**, if no other form of marine ins. [MARINE INS., HISTORY OF.]

CARY, JOAN, Merchant in Bristol, pub. in that city, in 1696, *An Essay on the Coin and Credit of England as they stand with respect to its Trade*. He also pub., in 1745 [or earlier], *An Essay on Trade*, in which there are some important remarks on marine ins., which we have dealt with under heads relating to that subject.

CASA DE CONTRATACION.—A species of mercantile corporation peculiar to the maritime cities of Spain during the 14th, 15th, and several later centuries. [BURGOS.]

CASAREGIS, SIGNOR JOSEPH L. M., an Italian writer on marine ins., pub. at Florence, 1719-29, *Discursus Legales de Commercio*, etc. (3 vols.) A 2nd ed., in 1740, at Venice,

in 4 vols. "This is a work of the highest authority."—*McCulloch*. Casaregis is the best of the Italian writers upon general commercial and maritime law. He was for more than 20 years a Judge at Florence ; he had taught as a professor of the law ; and his writings enjoy the highest reputation as standard authorities on mercantile affairs. The third volume contains the *Consolato del mare*.

CASE, H., Man. *Maritime Ins. Co.*, Liverpool, from its commencement, in 1864, down to 1868.

CASE STATED.—An agreement between litigants, setting forth the facts and points in dispute, with a view to a prompt decision.

CASH, T., Sec. *Temperance and General* [formerly *United Kingdom Temperance*], which position he has occupied since 1862.

CASHIER.—A person entrusted with the monetary interests of a public co., usually under the order of directors.

CASPER, DR.—In 1825 he pub., in Berlin, *Contribution to Medical Statistics* ; and in 1835, *An Inquiry into the Probable Duration of Human Life amongst Different Classes of People*. These works are referred to in different portions of this pub. Dr. Casper's writings are regarded as of great authority.

CASTING AWAY OF SHIPS.—An offence of very frequent occurrence. By stat. 4 Geo. I. c. 12 (1717), for effectually preventing the wilful casting away, burning or otherwise destroying of ships by the owners, masters, or mariners, it was enacted that their so doing to the prejudice of the underwriters of pol. of ins., or of merchants lading goods in such ships, *should suffer death* ! This Act was repealed in 1854 ; and the punishment of the offence is now regulated by the Merchant Shipping Act.

CASUALTY INSURANCE.—Under this title has been from time to time included various branches of ins., if not most of those, not included under the three great heads of marine, fire, and life ins. Hence it has included ins. against *captivity* ; ins. against *accident* to life or limb ; ins. against the perils of *maritime travel*, etc., etc. Many of these branches have now grown to be sufficiently important to bear distinctive titles—hence we have **CAPTIVITY INS.** ; **ACCIDENT INS.** ; and **MARITIME PASSENGERS' INS.**, all lifted out of our present category ; and we therefore have now only to deal with a more vague class of ins., all more or less relating to or supposing personal misadventure ; and all, for the want of more suitable distinction, now treated under **CASUALTY INS.**

Malynes, in his *Lex Mercatoria*, 1622, says, "Likewise a traveller undertaking a voyage to Jerusalem, or Babylon, *delivering out money payable at his return*, will providently ins. a sum of money upon his life, etc." We have taken much pains to unravel the meaning of the words we have placed in *italics* : we believe we have succeeded, although we cannot support our belief on any very direct testimony ; it is this : When a merchant was about to embark upon a trading venture which would cause his absence for several years, he closed up all his affairs, much as he would if he knew he were going to die on a certain day. Any surplus cash he had beyond the requirements of his voyage he deposited with other merchants of repute upon the condition that if he returned safely he should have his money repaid with a considerable bonus ; *but if he never returned, the money would never be claimed*.

Now those who have made themselves familiar with **BOTTOMRY INS.** will at once see that this was but a bottomry ins. applied to a human being instead of a ship. A merchant fitting out a ship for a voyage says to another merchant, or capitalist, Lend me £1000 upon this adventure ; if the ship returns I give you £1500 ; if she be lost, you have lost your money. Another merchant says, I am going on a voyage which will occupy several years ; I have more cap. than I care to risk on that venture ; I will deposit £1000 with you, upon condition that if I return you pay me £1500 ; if I never return, you keep the whole. This is but another of the many methods devised for defeating the *Usury Laws*. It will of course be remembered that in these early times there were no banks or other solid inst. in which a merchant could deposit his surplus capital during his absence. This was **CASUALTY INS.** pure and simple—it covered all casualties incident to personal safety during the journey.

Mr. Francis, in his *Annals, Anecdotes, etc., of Life Assu.*, 1853, speaks with certainty regarding this branch of ins. ; and we feel bound to say—the more so because a contrary impression has existed—that we have nearly always found his statements based upon authority. He says :

Another mode of assu. was commonly practised, by which any traveller departing on a long and dangerous voyage deposited a specific amount in the hands of a money-broker, on condition that if he returned he should receive double or treble the amount he had paid ; but in the event of his not returning, the money-broker was to keep the deposit ; which was in truth a prem. under another name.

De Foe, in his *Essay upon Projects*, 1697, after enumerating the branches of ins. then in force—fire, marine, and life, says :

Another branch of ins. is by contribution, or *F. sos.* ; which is in short a number of people entering into a mut. compact to help one another, in case any disaster or distress fall upon them.

If mankind could agree, as these might be regulated, all things which have casualty in them might be secured. But one thing is particularly required in this way of insurances. None can be admitted but such whose circumstances are, at least in some degree, alike, and so mankind must be sorted into classes ; and as their contingencies differ, every different sort may be a so. upon even terms ; for the

circumstances of people, as to life, differ extremely by the age and constitution of their bodies, and difference of employment; as he that lives on shore against him that goes to sea, or a young man against an old man, or a shopkeeper against a soldier, are unequal. I don't pretend to determine the controverted point of predestination, the foreknowledge and decrees of Providence; perhaps if a man be decreed to be killed in the trenches, the same foreknowledge ordered him to list himself for a soldier that it might come to pass; and the like of a seaman; but of this I am sure—speaking of second causes—a seaman or a soldier is subject to more contingent hazards than other men, and therefore are not upon equal terms to form such a so.; nor is the annu. on the life of such a man worth so much as it is upon other men; therefore, if a so. should agree together to pay the executor of every member so much, after the decease of the said member, the seaman's executors would most certainly have an advantage, and receive more than they pay. So that 'tis necessary to sort the world into parcels, seamen with seamen; soldiers with soldiers, and the like.

It will be observed that the classes he proposes to deal with are all such as prob. were then as now excluded from all ordinary F. sos. by reason of the risk of their occupation. He proceeds to develop his plan :

Wherefore, for the encouragement of sailors in the service of the merchant, I would have a F. so. erected for seamen, wherein all sailors or seafaring men enter their names, places of abode, and the voyages they go upon, in an office of ins. for seamen, and paying there a certain small quarterage of 1s. per quarter, should have a sealed certificate from the Governors of the said office, for the articles hereinafter mentioned :

1. If any such seaman, either in fight, or by any other accident at sea, come to be disabled, he should receive from the said office the following sums of money.

For the loss of an Eye	£ 25 or £ 2 p.a. for life	For the loss of Left Hand	£ 50 or £ 4 p.a. for life
„ Both Eyes	£ 100 „ £ 8 „	„ Right Arm	£ 100 „ £ 8 „
„ One Leg	£ 50 „ £ 4 „	„ Left Arm	£ 80 „ £ 6 „
„ Both Legs	£ 80 „ £ 6 „	„ Both Hands	£ 160 „ £ 12 „
„ Right Hand	£ 80 „ £ 6 „	„ Both Arms	£ 200 „ £ 16 „

Any broken arm, or leg, or thigh, towards the cure £ 10

If taken by the Turks, towards his ransom £ 50

If he become infirm and unable to go to sea, or maintain himself, by age or sickness, p.a. ... £ 6

To their wives if they are killed or drowned £ 50

In consideration of this every seaman subs. to the so. shall agree to pay to the receipt of the said office his quota of the sum to be paid, whenever and as often as such claims are made; the claims to be entered into the office, and upon sufficient proof made, the governors to regulate the division and pub. it in print.

We do not find that this project was ever carried into practice; although during the South Sea period several projects were set on foot coming very nearly within our present classification.

In the LOTTERY Ins. projects which succeeded this period, as also in the various projects of GAMBLING INS., there was frequently much of the casualty element, as considered distinctly from misadventure to life and limb; while under the BIRTH and MARRIAGE INS. projects, we have another and distinct phase of CASUALTY INS. These are all treated of under their proper heads; and we do not therefore propose to discuss them here.

The next, and that is the modern, phase of CASUALTY INS. was the origination of the cos. for ins. against life and limb. These are spoken of fully under the head of ACCIDENT INS., HIST. OF. We may here remark that this branch of ins. in the U.S. is still designated CASUALTY INS. PLATE-GLASS and HAIL-STORM INS. have long been in practice. Subsequently there was introduced STEAM BOILER INS.; followed by the ins. of horses, and carriages, severally against injury, death, or destruction—spoken of under CARRIAGE INS. and HORSE INS. More recently there has been an attempt at COLLIERY INS.; while at the present moment a project for ins. against the damage resulting from floods and storms, and the consequent inundations, is seriously under consideration. Hence the ground for CASUALTY INS. in its more extended aspect has been pretty well covered.

The *Asylum* L. in 1824 undertook the ins. of females in a state of pregnancy; and also the ins. of persons predisposed to hereditary or constitutional maladies. [ASYLUM, etc., L.]

In 1847 the *Professional* L. was founded, and one of its features was the ins. against paralysis, blindness, insanity, accidents, and other bodily and mental afflictions disabling the parties.

In 1854 the *Brit. Nation* Ins. Co. was founded. It had a "Casualty or Death" department, under which a healthy person might ins. for the payment of a sum of money in the case of "paralysis, blindness, insanity, accident, or death"—whichever event may first occur. Here is an abstract of the T. of prems. for ins. £100:—

Example.—A person, aged 30 next birthday, by the ann. payment of £3 3s. 5d., may secure himself against the results of mental or bodily incapacity—or, if never so afflicted, may leave the sum, £100, to his family or survivors.

This Co. had another branch, under which annu. were granted to persons in health,

Age next Birthday.	PREMIUMS PAYABLE.					
	Annually.		Half-yearly.		Quarterly.	
	£	s. d.	£	s. d.	£	s. d.
20	2	10 9	1	6 3	0	13 6
25	2	17 0	1	10 3	0	15 3
30	3	3 5	1	13 4	0	17 1
35	3	13 1	1	18 1	0	19 5
40	4	3 1	2	3 2	1	2 0
45	4	19 2	2	11 2	1	6 0
50	5	15 7	2	19 6	1	10 3
55	7	1 2	3	13 3	1	17 3

against not only paralysis, blindness, insanity, or accidents, but against "every bodily or mental affliction totally disabling the insured." Here is an abstract of the T. of prems.:

Age next Birth- day.	ANNUAL PREMIUMS TO ASSURE.												Age next Birth- day.			
	£20 per Annum.			£30 per Annum.			£50 per Annum.			£75 per Annum.				£100 per Annum.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
20	1	7	7	2	1	1	3	8	1	5	1	10	6	15	7	20
25	1	10	5	2	5	3	3	14	11	5	12	0	7	9	1	25
30	1	13	6	2	9	9	4	2	7	6	3	5	8	4	3	30
35	1	16	8	2	14	6	4	10	2	6	14	9	8	19	4	35
40	2	0	4	2	19	11	4	19	2	7	8	2	9	16	0	40
45	2	4	3	3	5	10	5	8	10	8	2	7	10	16	4	45
50	2	8	8	3	11	3	5	19	6	8	18	6	11	17	4	50
55	2	14	0	4	1	3	6	14	2	10	0	3	13	2	2	55

Example.—A person aged 30 next birthday, by the ann. payment of £1 13s. 6d., or £2 9s. 9d., or £4 2s. 7d., or £6 3s. 5d., or £8 4s. 3d., may, during life, secure an ann. of £20, £30, £50, £75, or £100, if permanently afflicted in mind or body totally incapacitating.

These rates also included "parti. in all the benefits and advantages of the asso."; but we need not dwell upon this feature now.

The *Travellers' and Marine Ins. Co.* of the same year had a somewhat analogous system of ins. [HEALTH INS.]

In the *Assu. Mag.*, 1859 [vol. viii., p. 241], there is a clever paper, we believe from the pen of Mr. Charles Jellicoe, *On the Casualties to which Contracts of Life Assu. are Liable*. We shall speak of these under CONDITIONS OF INS. and other heads.

The *Union Casualty*, founded in the U.S. in 1866, had the following wide range of bus. within the limits of its charter: "To insure against loss, damage, or liability arising from any unknown or contingent event whatever, which may be the subject of legal ins., except the perils and risks included within the departments of fire, marine, or life assu."

The *Personal Beauty Ins. Asso.*, projected some few years since, in jest or in earnest, would, if carried out, have embodied one of the most difficult branches of Casualty Ins.

During the recent Franco-German war several ins. combinations were organized in Paris, to protect its citizens from the casualties of warfare, both as to persons and property. [WAR INS.]

In the present year of grace, 1872, a new species of Casualty Ins. was inaugurated. In the *Times* of 15th June is given an extract or abstract of their Naples correspondent's letter, under date 8th of the same month:

The following incident belongs to the history of our great eruption. You have already been informed that it was proposed to form an assu. so. to indemnify the proprietors of land in the Vesuvian district for losses by the occasional freaks of our volcano, and that on the 6th of June a meeting was to be held for the purpose, when all interested were to be represented. On Thursday, therefore, the rooms of the Technic Institute were tolerably well filled by the president and the members, and deputies from Ottaiano, Boscoreale, Torre Annunziata, Torre del Greco, Resina, Portici, S. Giorgio a Cremano, S. Anastasia, Massa di Somma, and S. Sebastiano. I give you a list of names not unknown to the world, for at various epochs I have had to record the terrible disasters which have befallen these communities from the action of Vesuvius, and Massa di Somma and S. Sebastiano are still lying prostrate. The object of the meeting was to form an association to meet not merely the possible but probable losses occasioned by eruptions, and the president in his opening speech enlarged on the necessity of such an institution. Signor Milelotti, to whose energy and foresight we are indebted for the idea, and who for several years has been labouring to convince the Neapolitans of its expediency, afterwards gave a full explanation of his proposed plan. On its being submitted to the vote, it was approved, so far as its general principles are concerned, and a committee was appointed to draw up the regulations for the *Mut. Assu. Vesuvian Asso.*, which regulations will be laid before another general meeting for discussion and approval. The committee is composed of men whose names and offices are certain to inspire confidence; thus, I see those of the Prefect of Provinci, of the President and four deputies of the Provincial Council, of the President and perpetual secretary of the Royal Institute of Encouragement, of the President of the Agricultural Society, and of five other gentlemen of high consideration. That such an asso. is absolutely demanded to meet the losses occasioned by a frequently recurring calamity no one can doubt; and it is equally clear that public charity cannot be appealed to with certainty on all such occasions, and I should be almost justified in saying that such an appeal should not be made. The disasters which have lately been inflicted by Vesuvius are more than possibilities, or even probabilities; the intervals of their recurrence can with some degree of security be calculated, and the people of the menaced districts are as much bound to unite for mutual assistance as those in the north do against losses from hailstorms or any other natural visitation. The money that was subscribed for the relief of the sufferers by the former eruption has not yet been all distributed or called for when another disaster occurs which renders necessary an appeal to public charity, not for 700,000 lire, as I stated, but for at least 2,000,000 lire. Sympathy has, it is true, been strongly awakened in favour of the sufferers, but it may become less demonstrative when too frequently called upon, and the only real security for the future lies in the principle now adopted by the people of helping themselves.

CASUS BELLI.—An occurrence giving rise to or justifying war.

CATAMARANS.—Fire-machines for destroying ships.

CATCHING BARGAIN.—A purchase from an expectant heir, for an inadequate consideration.

CATHOLIC GUILD PROVIDENT ASSU. ASSO. was founded at Chelsea in 1850, for granting L. pol., endowment, and sickness ins. and annu. It was regis. under the F. Sos. Acts. In 1852 it ceased to carry on bus.

CATHOLIC LAW AND GENERAL FIRE INS. CO. was founded in 1850, with an authorized cap. of £100,000, in shares of £5, of which about £26,000 was subs. It continued bus. down to 1852, when it disappeared from view.

CATHOLIC LAW AND GENERAL LIFE ASSU. So., founded in 1846 (having been projected in the preceding year), with an authorized cap. of £1,000,000, in 50,000 shares of £20. the prospectus said :

The plan upon which the present So. is based has been adopted after a most careful and minute investigation of the principle of the offices in the foregoing T. [the usual prosp. list of successful and large dividend paying offices], and the advantages the promoters consider they are enabled to offer to the public will be rendered still more intelligible by a concise reference, in the first place, to the peculiar circumstances under which this So. is formed ; and secondly to the benefits of L. assu. generally. Besides these, possessed in common with other institutions, there is still a vacancy which this So. proposes to fill up. Various classes of the community have at different times formed L. assu. cos., upon which—in accordance with their religious feelings—they have bestowed their names and patronage. For instance, the *Church of England*, the *Dissenters*, etc.; and prob. the Catholics—the most numerous body in the Brit. empire, next to those of the Church of England—are the only class who have not yet given their name to any similar inst. Combined therefore with the title of Law and General, the title of Catholic has been assumed; and it is not to be doubted but that the clergy and laity of this numerous communion will give a preference to a so. in which influential members of their own body are known to take a part, both as to its management and responsibility.

The prosp. contained the names of many of the highest personages in the Catholic community, with the Earl of Shrewsbury at the head. The Consulting Act. was Wm. Lewis; the Sec. Wm. Norris.

During the first few years the bus. was very small; but at the fourth ann. meeting, held in July, 1850, the report stated that judicious and energetic measures had been taken for extending the bus. of the Co. in France; and that under the favour of the Archbishop of Paris and other ecclesiastical authorities, numerous priests had promised to give them their support; that in the limited space of four months various prosp., a complete set of T., books of instruction, etc., had been translated or written, pub. and circulated, and that every great town and city, and that every place of note in the various departments of France, had then an agent; and that in addition the Co. had four travelling agents in constant motion there.

It was resolved in the same year to reduce the cap. from £1,000,000 to £200,000; and at the same time to increase the paid-up cap.

Notwithstanding all the above, the bus. of the Co. still continued very small. In the 5th year pol. for ins. £29,772 were issued; and the total pol. issued up to that date was but 505, of which 96 had lapsed. The ann. income was then £3653. The Co. had issued some annu. An "Operatives Fund" was estab. about that period.

The change in the cap. does not appear to have worked well; and ultimately shares to the extent of £230,000 of the orig. cap. were forfeited.

The Co. struggled on, under most frugal management expenses, until 1857, when the bus. was amalg. with the *Phoenix L.*

CATHOLIC LIFE AND FIRE ASSU. AND ANNU. INST. LIM.—This co. was projected at the close of 1869, with an authorized cap. of £1,000,000, in 100,000 shares of £10. The regis. promoters were W. B. Arnold, H. Brooks, E. Stanway, H. Brooks (No. 2), John Lingard Dunham, H. Whitehead, and F. Rogers. We believe it never became completely established.

CATS ON BOARD SHIP.—By stat. 3 Edward I. c. 4, passed 1275, it is enacted: That where a *man*, a *dog*, or a *cat* remains alive in the ship, neither such ship, nor barge, nor anything within them, shall be adjudged a *wreck*; but the goods shall be saved and kept by the sheriff for the benefit of the owners, otherwise they shall remain to the king. "It has often happened that, after a ship has been abandoned, some domestic animal—a dog, a canary-bird, or most frequently a cat, from its hatred of facing the waves—has saved the vessel from being condemned as a derelict."—*Once a Week*.

The master of a ship freighted with goods which are subject to depredation by rats is bound to have cats on board, or he cannot recover from the insurer in respect of any such damage.

A statement was made in Sept. 1871, at a vestry meeting of the parish of St. George-the-Martyr, Southwark, that there are in London 700,000 cats. No captain need, therefore, sail from the port of Lond. without the "safeguard" cat. In some of the seaport towns in England cats are said to be scarce, in consequence of the great demand continually made for them.

CATTERMOLE, REV. R. (B.D.), was Secretary of *Protestant F. Ins. Co.* during 1852–3.

CATTLE.—Beasts of pasture, neither wild nor domestic. The term may have been derived from *chattels*.

The number of cattle in Gt. Brit. in 1867 was 4,993,034—viz. 2,038,092 cows and heifers in milk or in calf, 1,688,189 other cattle under two years of age, and 1,266,753 aged two years and upwards. The number of sheep was 28,919,101, and the number of pigs was 2,966,979. The proportional number of live stock to every 100 acres under crops, fallow, and grass in Gt. Brit. in 1867 was—cattle, 16·7; sheep, 96·9; pigs, 9·9.

The proportional number for sheep in England was 86·3; in Scotland it was 157·4. Turning to the counties of England, the proportional number of cattle and of sheep in 1867 to every hundred acres under crops, bare fallow, and grass was, respectively, 10·0 and 77·3 in Bedford, 8·3 and 96·1 in Berks, 14·8 and 90·0 in Bucks, 7·6 and 68·6 in Cambridge, 22·8 and 53·7 in Chester, 28·7 and 86·7 in Cornwall, 20·2 and 101·9 in Cumberland, 25·4 and 54·2 in Derby, 19·4 and 88·0 in Devon, 14·9 and 115·8 in Dorset, 13·1 and 53·9 in Durham, 7·8 and 58·3 in Essex, 16·2 and 75·7 in Gloucester, 7·3 and 87·0 in Hants, 16·5 and 87·1 in Hereford, 7·2 and 65·5 in Hertford, 10·0 and 77·3 in Huntingdon, 9·5 and 148·4 in Kent, 27·6 and 46·2 in Lancaster, 25·4 and 102·2 in Leicester, 11·6 and 117·4 in Lincoln, 17·2 and 44·3 in Middlesex, 16·8 and 87·3 in Monmouth, 9·9 and 74·5 in Norfolk, 18·0 and 104·3 in Northampton, 11·2 and 132·8 in Northumberland, 15·3 and 74·9 in Nottingham, 10·5 and 94·3 in Oxford, 16·4 and 139·3 in Rutland, 17·4 and 78·8 in Salop, 22·9 and 93·1 in Somerset, 19·9 and 63·0 in Stafford, 7·5 and 71·3 in Suffolk, 12·8 and 41·5 in Surrey, 13·8 and 88·8 in Sussex, 16·6 and 88·1 in Warwick, 22·8 and 147·9 in Westmoreland, 10·7 and 103·3 in Wilts, 12·5 and 70·7 in Worcester, 9·5 and 87·7 in the East Riding of York, 16·8 and 90·3 in the North Riding, and 18·5 and 71·2 in the West Riding.

In the U.K., 1867, the numbers were—cattle, 8,731,473; sheep, 33,817,951; and pigs, 4,221,100. The difference is made up by the add. of the returns for Ireland, where, while the pop. had been decreasing, the live stock had been very rapidly increasing. In 1868 the figures for the U.K. stood as follows: cattle, 9,083,416; sheep, 35,607,812; pigs, 3,189,167. The decrease in the number of pigs was about 22 p.c.

A statement of the live stock in foreign countries, according to the latest returns, shows the number of cattle, sheep, and pigs, respectively, to be as follows: Russia in Europe, 22,816,000, 39,315,000, and 9,517,000; Russia in Asia, 2,628,000, 5,815,000, and 580,000; Sweden, 1,985,000, 1,650,000, and 390,000; Norway, 953,036, 1,705,394, and 96,166; Denmark Proper, 1,193,861, 1,874,052, and 381,512; Prussia, 7,996,818, 22,262,087, and 4,875,114; Wurtemberg, 911,013, 655,856, and 254,888; Bavaria, 3,162,387, 2,039,983, and 921,456; Holland, 1,271,563, 1,076,374, and 321,534; Belgium, 1,257,649, 583,485, and 458,418; France, 14,197,360, 33,281,592, and 5,246,403; Spain, 2,904,598, 22,054,967, and 4,264,817; Italy, 3,708,635, 11,040,339, and 3,886,731; Austria, 13,660,332, 16,573,459, and 7,914,855; Switzerland, 992,895, 445,400, and 304,191; United States, 12,674,968, 32,795,797, and 13,616,876.

The above returns do not include horses. The following more recent estimate has been made; but as it is drawn chiefly from agricultural returns, we consider it rather under than over-stated:

	Horses.	Cattle.	Sheep.	Pigs.
In Scotland...	186,900	1,017,724	6,995,337	129,227
„ England...	1,144,996	3,706,641	19,821,863	1,629,550
„ Wales.....	132,165	589,108	2,720,941	171,675
„ Ireland ...	527,248	3,727,794	4,648,158	1,079,793
	<u>1,991,309</u>	<u>9,041,267</u>	<u>34,186,299</u>	<u>3,010,245</u>
Taking 1,991,309 Horses at an average value of £12 each ...				£23,895,708
„ 9,041,267 Cattle at an average value of £9 10s. each...				85,892,036
„ 34,186,299 Sheep at an average value of £1 7s 6d. each				47,006,161
„ 3,010,245 Pigs at an average value of £1 15s. each ..				5,267,928
				<u>£162,061,833</u>

The importation of horned cattle from Ireland and Scotland into England was prohibited by law in 1663. This law has been since repealed. In 1842 a duty of small amount was imposed upon cattle imported from foreign countries; but in 1846 the importation was rendered free of duty, since which the numbers have enormously increased. The returns of horned cattle imported into the U.K. during a series of years furnish the following figures: 1849, 53,480; 1853, 125,523; 1855 (war), 97,527; 1860, 104,569; 1865, 283,271; 1866, 237,739.

The Customs returns for 1868 show that a total of 511,564 live stock of all kinds were imported into the U.K. during that year, consisting of 103,726 oxen and bulls, 11,143 cows, 21,819 calves, 323,447 sheep, 17,708 lambs, and 33,721 swine and hogs. An analysis of ports at which they were imported shows that 332,630 animals were brought to Lond., 70,909 to Harwich, 24,820 to Hartlepool, 27,662 to Hull, 11,109 to Newcastle, 9797 to Leith, 6305 to Plymouth, 2449 to Falmouth, 4107 to Liverpool, 5275 to Grimsby, 4325 to Portsmouth, 3429 to Southampton, 3042 to Sunderland, and 2762 to Dublin. Of those landed in Lond., 6293 were detained on account of disease or injury, consisting of 729 beasts, 58 calves, 5072 sheep, and 434 pigs. A comparison of statistics with those of former years shows that the total quantity of animals imported did not reach half that brought in 1866. The importation of cattle from Spain and Portugal into the port of Liverpool had largely increased since the cessation of the cattle plague.

CATTLE, DISEASES OF.—These are generally spoken of under the one designation of the **CATTLE PLAGUE**; but unfortunately we seem now to be called upon to look at the disease of Cattle rather as chronic than merely spasmodic. A Privy Council return for 1862 showed that during the six years ending 1860, there was an ann. loss of 375,850 cattle from contagious disorders other than cattle plague—a loss of nearly 5 p.c on the entire stock of horned cattle. The disease of cattle is by no means a modern infliction.

Most of the historians of the "Plague" which devastated Europe in 1348, state that it also extended to the domestic animals, and to cattle and sheep; although we think it quite possible that the deaths of all these dumb creatures may have arisen from the want of attention and provision during the winter. We see records of as many as 5000 sheep dying in one district. The effect on the prices of animals was most remarkable, and yet quite natural. On the commencement of the plague a horse worth 40s. would be sold for 6s. 8d.; a cow for 1s., which the year preceding would have fetched at least 5s.; and so in proportion for all other stock. After the pestilence, which had spent itself in about one year, or by August, 1349, there was a great rise in the price of stock which had escaped; for the fear of famine was the next evil in store. For further information on these points see the *Chronicon Preciosum*.

There appears to have been a real outbreak of cattle disease early in the last century; for we find in July, 1715, the following advertisement:

The Commissioners named in the brief granted by His present Majesty to the sufferers by the late mortality amongst the cattle are desired to meet at the Old Devil Tavern, near Temple Bar, upon Monday next, the 18th of this inst. July, at 2 of the clock in the afternoon, in order to appoint a receiver of the money to be collected by the said brief, and other matters relating thereto.

In 1745–6 a severe outbreak of cattle disease occurred, which continued for several years. In 1746 there was enacted the 19 Geo. II. c. 5: *An Act to enable His Majesty to make Rules, Orders, and Regulations more effectually to Prevent the Spreading of the Distemper which now rages amongst Horned Cattle in this Kingdom*. Under the authority of this Act the Privy Council ordered (12th March, 1746) diseased beasts to be shot, and their skins destroyed, granting moderate compensation to their owners. The above Act was amended by 20 Geo. II. c. 4; also continued and amended by 21 Geo. II. c. 33; 22 Geo. II. c. 46 (s. 24–33); 23 Geo. II. c. 23; 24 Geo. II. c. 54; 25 Geo. II. c. 31; 26 Geo. II. c. 34; 27 Geo. II. c. 14; 28 Geo. II. c. 18; and 29 Geo. II. c. 28.

In 1750 there was pub., *Sacred Declarations, or a Letter to the Inhabitants of Lond., Westminster, and all other parts of Gt. Brit., on the account of those Sins which provoked God to send and continue the Mortal Sickness among the Cattle, and to signify by the late awful Earthquakes that His Anger is not turned away*. A copy is preserved in the Brit. Museum.

In 1757 there was passed the 30 Geo. II. c. 20: *An Act more effectually to Prevent the Spreading of the Distemper now raging amongst Horned Cattle in this Kingdom*.

In 1770 there appears to have been another outbreak of disease, and the following Acts were passed in relation thereto—(1). 10 Geo. III. c. 4: *An Act for Indemnifying all Persons, with respect to Advising, or Carrying into Execution His Majesty's Orders of Council made for Preventing the Spreading of a Contagious Disorder amongst the Horned Cattle, and for rendering the same Valid and Effectual; and for Prosecuting the same for a further time*. (2). 10 Geo. III. c. 45: *An Act to Prevent the further Spreading of a Contagious Disorder amongst the Horned Cattle in Gt. Brit.* The disease was then raging in "certain parishes in the county of Southampton." The last-named Act was extended by 12 Geo. III. c. 51, and by 14 Geo. III. c. 86.

In 1781 another distemper broke out among the horned cattle; and an Order in Council was issued directing the beasts infected to be killed and buried, in order to prevent infection.

The losses in France and Belgium by the various diseases to which cattle became exposed during the years 1711, 1740, 1770, and 1796, have been estimated by Dr. Faust to amount to no less than 10 millions of heads of cattle, equivalent in value to £80,000,000 sterling! From 1827 to 1846 pleuro-pneumonia carried off in the Department du Nord alone, 212,800 cattle, the value of which was reckoned at £2,080,000 sterling.—*Assu. Mag.* vol. viii. pp. 285–6.

In 1798 there was enacted, the 38 Geo. III. c. 65, *An Act for Preventing the Depasturing of Forests, Commons, and Open Fields, with Sheep or Lambs infected with the Scab or Mange, in that part of Gt. Brit. called England*.

In 1848 an outbreak occurred among sheep in Gt. Brit., and two measures were enacted by Parl. (1). 11 & 12 Vict. c. 105: *An Act to Prohibit the Importation of Sheep, Cattle, or other Animals, for the purpose of Preventing the Introduction of Contagious or Infectious Disorders*. (2). 11 & 12 Vict. c. 107: *An Act to prevent until the 1st Sept., 1850, and to the end of the then Session of Parl., the Spreading of Contagious or Infectious Disorders among Sheep, Cattle, and other Animals*. This Act recites: "Whereas a contagious or infectious disorder, known or described as the smallpox, or Variola Ovina, now prevails among the sheep in some parts of the U. K., and it is necessary to take measures to prevent such disorder from spreading," etc. Then follow a number of stringent provisions. This Act was continued and extended by 16 & 17 Vict. c. 62 (1853).

In 1849 M. Loiset, in his report to the National Assembly of France, fixed the ann. average of losses by mort. of cattle in France at 40 millions of francs—£1,600,000. This was considered to be somewhat overstated.—*Assu. Mag.* vol. viii. p. 295.

In 1857 a severe epidemic was raging amongst cattle in several foreign countries ; and prohibitions were issued against the import of any animals from such countries into Gt. Brit.

The *Norfolk Farmers Ins. Co.* computed that more than 187,000 cattle died of pleuro-pneumonia in 1860, and that 960,000 died of that disease in the six years preceding the outbreak of the rinderpest. Prof. Gamgee stated that, in 1862, the sacrifice by pleuro-pneumonia amounted to £2,000,000 worth of cattle. This may be an excessive statement ; but the losses returned by the above-named ins. co. were 69½ p.c. of all prems. upon ins. of cattle in 1858 ; 45 p.c. in 1859 ; and 47 p.c. in 1860.

In Aug. and Sept., 1862, many sheep in Wiltshire died of the smallpox ; and the Gov. took steps to prevent contagion.

On the 24th June, 1865, there commenced at a dairy in Islington that great modern outbreak of disease known as the Cattle Plague, or Rinderpest. From this one centre the disease rapidly spread through Gt. Brit. ; and the means of its so spreading has been distinctly traced to the sending of a single fat cow from a neighbouring dairy to the Metropolitan Cattle Market for sale. Prof. Simonds declared the disease to be identical with the cattle plague of Russia and Eastern Europe. The rapidity of its progress may be seen from the following facts :—By the 14th of July the plague had been recognized in many other London dairies, and also at Dalston and Hendon, and it appeared simultaneously in four distant counties, Norfolk, Suffolk, Shropshire, and Devonshire, being in all of them distinctly traceable to direct importation. Before the end of July it had also shown itself in Kent, Northumberland, Sussex, Hants, Aberdeen, Stafford, Flint, and Essex. The reported number of attacks rose from 639 in the week ending July 8, to 1203 in the week ending August 19, and to 10,107 in the last seven days of the year. By the end of 1866 every county in England, except Westmoreland, had suffered, as had also two counties in Wales and 22 in Scotland. Up to the same date 278,439 cattle are reported to have been attacked in Gt. Brit. Of these 133,455 died, 99,686 were slaughtered, 40,182 recovered, and 5116 remain unaccounted for. The Privy Council reporter states that “the value of the property directly lost, without reckoning the indirect losses, which must have occurred in every direction, may certainly be estimated by millions—probably at not less than five millions sterling.” It was stated that 56,911 healthy cattle were slaughtered to prevent the spread of the disease.

The annexed table shows the comparative course of the disease in 1865, 1866, and 1867:

Week Ending.	1865. Attacks.	1866. Attacks.	1867. Attacks.	Week Ending.	1865. Attacks.	1866. Attacks.	1867. Attacks.
Jan. 5...	—	11,504	10	July 6...	639	382	2
„ 12...	—	11,071	3	„ 13...	297	355	9
„ 19...	—	13,147	11	„ 20...	577	234	3
„ 26...	—	12,888	1	„ 27...	730	235	6
Feb. 2...	—	13,609	28	Aug. 3...	953	251	—
„ 9...	—	14,550	1	„ 10...	1122	171	11
„ 16...	—	15,450	2	„ 17...	1203	170	1
„ 23...	—	17,875	1	„ 24...	1177	139	1
March 2...	—	10,971	—	„ 31 ..	1056	120	2
„ 9...	—	11,476	16	Sept. 7...	1063	80	1
„ 16...	—	10,333	11	„ 14...	1267	62	—
„ 23...	—	9388	—	„ 21...	1511	67	—
„ 30...	—	8002	5	„ 28...	1596	47	—
April 6...	—	6570	1	Oct. 5...	1497	33	—
„ 13...	—	5592	—	„ 12...	1803	12	—
„ 20...	—	4963	5	„ 19...	2111	6	—
„ 27...	—	4442	—	„ 26 ..	2233	15	—
May 4...	—	3363	10	Nov. 2...	3392	2	—
„ 11...	—	2956	17	„ 9...	4125	6	—
„ 18...	—	2405	33	„ 16...	4324	1	—
„ 25...	—	1687	84	„ 23...	5286	8	—
June 1...	—	1431	11	„ 30...	5717	32	—
„ 8...	—	1184	2	Dec. 7...	7868	13	—
„ 15...	—	743	5	„ 14...	8543	8	—
„ 22...	—	579	13	„ 21..	9114	5	—
„ 29...	139	338	11	„ 28...	10,107	8	—

The whole number of animals attacked from the 1st of January to the 7th of Sept., 1867, appears to have been 348. The disease was considered to have died out by the

end of Sept. The disease was most fatal to cows and oxen ; the sheep lost by it were estimated at 7000 only.

A Royal Commission was appointed by Parl. to inquire into the causes of the cattle plague, and suggest remedies. The first report of this Commission was presented 31st Oct. 1865. The majority considered the disease to have been imported, and recommended slaughter of animals, and stringent prohibitions of passage of animals along or across the public roads. A 2nd Report was made 6 Feb. 1866 ; 3rd R., 1 May, 1866.

Prof. Gamgee brought the subject of the "Cattle Plague" before the Social Science Congress at its meeting in Sheffield ; and his paper was printed in the Journal of Social Science for that year.

In 1866 several legislative measures were enacted—(1). 29 Vict. c. 2 : *An Act to Amend the Law relating to Contagious and Infectious Diseases of Cattle and other Animals*. (2). 29 Vict. c. 4 : *An Act to Amend the Law relating to Contagious Diseases amongst Cattle and other Animals in Ireland*. (3). 29 Vict. c. 15 : *An Act to Amend the Act of the 11 & 12 Years of Her present Majesty, c. 107, to Prevent the Spreading of Contagious or Infectious Disorders among Sheep, Cattle, and other Animals*. (4). 29 & 30 Vict. c. 110 : *An Act to Amend the Cattle Diseases Prevention Act* [No. 1 of the above]. The Privy Council made the repressive measures general throughout the country, with the best possible effect.

At the Brit. Asso. meeting held at Nottingham in 1866, Dr. Cobbold, F.R.S., introduced a paper : *Remarks on the So-called Cattle Plague Entozoa*. The paper was purely scientific. The same author has more recently pub. a work on the subject.

In the 28th Rep. of Reg.-Gen. (pub. 1867), Dr. Farr calls attention to some interesting facts concerning cattle disease contained in a Rep. by Mr. Clode, of the Reg.-General's office, but which Report, we believe, has never been made public.

There was no case of cattle plague in 1868. The number of foreign animals inspected in that year by the Custom-house veterinary inspectors in Lond. and at Thames Haven was 320,233—83,144 beasts, 17,559 calves, 208,168 sheep and lambs, 11,369 pigs. 6293 of the whole number were detained and slaughtered on account of disease or injury—729 beasts, 58 calves, 5072 sheep, 434 pigs. 6021 of these were slaughtered, and the meat passed as fit for human food ; and 272 were condemned and destroyed, viz. 65 beasts, 35 calves, 127 sheep, 45 pigs. The whole number slaughtered on account of disease or injury in 1868, therefore, was 0·8 per cent. of the beasts imported, 0·3 p.c. of the calves, 2·4 p.c. of the sheep and lambs, 3·8 p.c. of the pigs. The proportion of sheep slaughtered was very large, owing to the sudden reappearance of sheep-pox in August in a cargo of upwards of 1300 sheep from Holland. Great credit was due to the inspectors for the discovery of this disease in one single case out of so large a cargo, when no intimation had been received that the disease existed in Holland. The whole cargo was slaughtered at the place of landing ; and, other cases following, quarantine or slaughter of the sheep at the place of landing was ordered. The large proportion of pigs slaughtered was owing to these animals having been much affected with eczema and cholera.

A serious outbreak of cattle disease was reported from Illinois, U.S. ; but we believe it was suppressed by prompt measures. The report received here said :—"It usually kills in a few hours. No premonitory warnings are given, and, although all the skill in possession of ordinary practitioners has been brought to bear upon it, it yields to no remedy or treatment, and is fatal in every instance. Its name and nature have not yet been determined."

At the Brit. Asso. meeting held at Norwich this year a paper was read by Mr. Wm. Smith : *Statistics of the Progress and Extermination of the Cattle Plague in Norfolk*. The writer said :—

The cattle plague has been known for more than a thousand years to have periodically devastated the Continent of Europe. About 810 it is supposed to have visited England. We have no authentic record of its having broke out in this island again until 1714, when, strange to say, it broke out in Islington about the middle of July. It committed great ravages for about three months, and disappeared about Christmas in the same year. It re-appeared in April, 1745, being, it was supposed, imported into England by some calves from Holland. It lasted 12 years, and killed many thousand head of cattle. It soon (as in the outbreak of 1865) found its way into Norfolk, estab. centres of contagion in some of the districts that have so recently suffered from it. In March, 1770, it was imported into Portsoy, in the Moray Firth, but was stamped out with a comparatively trifling loss ; the spread of the disease being prevented by the judicious and timely slaughter of the infected beasts, and those which had been in contact with them.

This paper is printed *in extenso* in vol. xxxi. of the *Statistical Journ.* (1868).

In 1869 there was passed the 32 & 33 Vict. c. 70 : *An Act to Consolidate, Amend, and make Perpetual the Acts for Preventing the Introduction or Spreading of Contagious or Infectious Diseases among Cattle and other Animals in Gt. Brit.* A disease among sheep was prevalent in Belgium, and several cargoes arrived in this country ; but the disease was detected on landing, and the sheep destroyed.

In 1870 was pub., under the authority of the Privy Council, *Report on the Cattle Plague in Gt. Britain during the Years 1865, 1866, and 1867, with Appendix, Tables, and Diagrams, showing the Progress of the Disease*. This Report was prepared by the Veterinary Department of the Privy Council Office ; and while it purports to have been issued in

1868, it was not actually issued until 1870. The Report itself is very meagre ; but the Appendix contains much important information.

In 1871 the "foot and mouth" disease broke out in various parts of England and Ireland, but did not increase to any very alarming extent.

In 1872 both the foot and mouth disease and pleuro-pneumonia are again becoming alarmingly prevalent in several parts of the country, and rigorous measures are now (Sept.) being taken to arrest its progress. Still more recently (Oct.) we hear of a severe disease amongst horses, in Canada, which is rapidly extending to the U.S. [HORSES.]

The subject of the vaccination of cattle, with a view to lessen their liability to certain contagious diseases, is happily receiving practical consideration.

CATTLE DISEASES PREVENTION ACT.—The 32 & 33 Vict. c. 70 (1869), which repeals many of the preceding Acts quoted above. [CONTAGIOUS DISEASES (ANIMALS).]

CATTLE INSURANCE.—The preceding articles could have no claim upon our space, but for their bearing upon Cattle Ins., usually called LIVE STOCK INS. [We consider the term "Cattle Ins." as more expressive, and therefore adopt it.] In view of the facts regarding the increasing prevalence of the disease amongst cattle and sheep, the subject of ins. becomes of growing importance. The practice of ins. cattle is by no means modern. We propose to trace its progress.

In the Ins. Ordin. of Spain, promulgated 1556, there occurs the following : "In ins. made upon slaves, or cattle, it must be declared in the pol. that it is on them ; otherwise the insurers run no risk [*i.e.* the said things are not ins.] ; and if any beast is thrown overboard, it shall not be brought into a gross average, but the insurers shall satisfy the loss" [Clause 33]. It is clear that all that is here implied is the ins. of cattle against the risks of the sea—a very different risk from ins. against death by disease or accident.

During the reign of Queen Anne—South Sea Mania period, 1710–20—a project was set on foot in Lond. for ins. horses, "whether dying natural deaths, or stolen or disabled." The cap. proposed for the project was two millions sterling, and its location the Crown Tavern, Smithfield. This Co. went the way of the majority of cos. of that period. In extending the ins. to horses "stolen," it outventured all the modern offices ; but that was the risk most required to be ins. against at that period. [HORSE INS.]

The bus. of ins. cattle was understood and practised in the North of Europe early in the last century. Here is the copy of a pol. issued in Hamburg in 1720. Under this pol. the insurers, *i.e.* the underwriters, took upon themselves the danger and risk of all distempers and sickness ; and of robbery, force, and all other accidents, whether to be "imagined or not," which might happen to the cattle ins. The document deserves careful consideration :

We the here-underwritten assurers promise and oblige ourselves to assure and do hereby assure you G d, R e and S n, or on behalf of any other person, to pay each of us the sum underneath respectively mentioned. And this assu. is made upon 62 heads of oxen which are now at grass in the County of Oldenberg, upon the estate of General Brilow, next to Ovelgonnen, as it is called, and belonging to the above ; and with consent of us assurers, he the assured values the said oxen at 14 Rix Dollars N. § per head with the prem., wherewith we are content, whether they cost or are worth more or less ; nor shall the assured be obliged to produce any further proof or account besides this policy in case of any damage or loss. We also consent that the assured may make his assu. to the full, without being obliged to run 10 p.c. or any risk whatever, notwithstanding the Ordinances of Assurances may say otherwise. For we freely of our own accord take upon ourselves all damages or misfortunes, that can be imagined or not, to befall or that may befall these oxen ; putting ourselves in all respects for everything in the place of the assured, to keep him free and harmless from all difficulties whatsoever, without any exception, notwithstanding any good or bad advices, beginning the risk from this day, and to continue to the 15 of October of this current year, 1720 ; promising in case of damage to pay to you, or the bearer hereof, all the loss you shall suffer in proportion to the sum underwrote by each of us hereunder, as well the first of us as the last, and that within 2 months next ensuing after due notice and intimation has been given us of what loss or damage has happened in regard to this assu. And we acknowledge to have been paid the prem. of this assu. by the hands of Abraham Van Herzele, in full, after the rate of 10 p.c. in N. §, after the usage and custom of the Exchange at Antwerp, to which we submit ourselves in so far as it is not contrary hereunto ; binding for this purpose all our goods, and renouncing upon good faith, and as under oath, all exceptions and cavils to the contrary. Thus done in Hamburg, in the year 1720.

The pol., although issued in Hamburg, was nevertheless subject to the usage and custom of Antwerp, where no doubt the ins. of cattle had been practised at a much earlier period.

It happened that under this very pol. there arose a claim, and we are thus enabled to see the process which was adopted in the settlement. It seems that the claim was sent in to the authorities of Bremen, who prob. formed the Chamber of Ins. for that district. They investigated the claim, and regis. their declaration as follows :

We, the Burgomaster and Senate of the City of Bremen, make known and attest hereby publicly, that Arend Korthan, our citizen and merchant here, personally appeared before us, acquainting us, that in the year last past, 1720, he had made an assu. at Hamburg, by G d, R e, and S n there, upon 62 heads oxen, which oxen, conformably to the tenor of the pol. of assu. made out for the same on the 27 June of the said year, were then still all sound and well ; nor had any of them died at that time, as he assured on oath : and he further humbly requested to be interrogated upon oath to the five following points, and graciously to grant him an attestation. . . . Which reasonable request we could not refuse the petitioner, he having actually confirmed the truth of the above written deposition with his corporal oath, before us as God should help him. We, Burgomaster and Senate aforesaid, attest and certify therefore, that his deposition made before us on oath, by these our Letters Patent, is corroborative with our knowledge under our City Privy Seal. Signed, Bremen, the 19 of July, 1721.

The interrogatories herein referred to, and the answers thereto, were as follows :—
 1. *When were the oxen upon which the assu. was made put to grass?* In the month of May, the usual and customary time for putting cattle to grass. 2. *How many head were in all at grass for Arend Korthan?* The 62 head upon which the assu. was made at Hamburg, besides 2 oxen belonging to another friend; and there were at grass besides 3 oxen for other people, making together 67 head. 3. *Had Arend Korthan no oxen at grass in any other meadows on the same estate?* In no other meadows than the two which have been named, viz. the Mill meadow and the Small Stone-horse meadow. 4. *How long did the oxen continue well, and when came the mort. amongst them?* In the month of July. 5. *What was the occasion of it, and were the meadows good, or any ways suspected?* The reason no man can know, but it was the hand of God; nor were the meadows suspicious in my opinion. Since it is not to be presumed that the meadows could be had in suspicion; for it was never yet to be discovered that the cause of distemper proceeded from the ground.

But the proof required by no means ended here. The next document is the following :

The Court of Assizes appointed by his Royal Majesty of Denmark, Norway, etc., for the town and district of *Fadinger Land*, doth certify and make known, that upon receipt of a requisitorial order from the King's Honourable Regency at Oldenburg, dated the 19 Sept. 1720, to this Court, the two following persons being appointed by M. Arend Korthan, of Bremen, viz., J. J. Wilhelms, and J. Oddings, having beforehand been seriously exhorted to avoid perjury, did, on the 30 Oct., 1720, before the Court make the following declaration upon oath, in relation to some oxen which the said Arend Korthan had at grass in this country.

Then follows the form of oath :

I, J. J. Wilhelms, and I, J. Oddings, Herdsmen to Arend Korthan, take our corporal oath to God : and first I, J. J. Wilhelms, for myself in particular, that I this year had for my share the care of 37 head of oxen from said Arend Korthan, on the Little Stone-horse meadow; but 22 of them died, whereof 18 were buried with their skins, and the other four without, having been flead first; and that Arend Korthan told me there was one ox among the 37, which belonged to a person on the other side of the Weser, but did not mention his name to me, which ox was among the number of the dead; and that two oxen, which are both alive, were for some friends. And next I, J. Oddings, swear a corporal oath to God, that I for my particulars did attend to 30 head of oxen for Arend Korthan in the Mill meadow, but that 23 of them died, of which 19 were buried with their skins, and the other 4 without, having been flead first; and that the said Arend Korthan told me himself there were 2 oxen among them that belonged to some other people, which he did not name to me, and the said 2 oxen are likewise both dead. All which is herewith confirmed by the Court, and a judicial attestation thereof granted to the said Arend Korthan, Merchant, of Bremen. In witness, etc.

Then, and finally, comes the statement of loss for settlement, thus : Calculation of the loss upon 62 head of oxen, valued in the pol. at 14 Rix-dol. per head, with prem., Mks. 2604. The loss thereupon, viz. 18 oxen remained alive; 42 oxen died, at 14 Rix-dol.; 2 oxen killed; deduct value of salvage; add expenses—total loss, Mks. 1810 10s.—which Mks. 1810 10s. N. $\frac{3}{4}$, divided upon the cap. of Mks. 2604, make 69 $\frac{1}{2}$ p.c., “and the assurers did pay 67 p.c.” The 2 p.c. deduction being according to the usage at Antwerp. The prem. paid was 10 p.c.

In 1753 Nicholas Magens, merchant, pub. in Hamburg, his *Essay on Insurances*. Under head of “Ins. on Cattle,” he says, “When any infectious distemper reigns among cattle, graziers or cowkeepers, whose cap. is chiefly employed therein, and may be more than they can afford to lose, are permitted to ins. the lives of their stock before the sickness has appeared amongst them.” From this it would appear that such ins. were only permitted in times of epidemic. It may be on this account that no regular office was at this period founded for the ins. of cattle. Magens, reviewing the form of pol. we have already given, says :—“Such pol. should always contain a declaration by the person ins. that to his knowledge no distemper was at that time amongst them, and that no diseased cattle should with his consent come near those he ins. The insurers are to take care that they are not overvalued.”

In 1774 an office was estab. in Copenhagen, to which the insured were to pay a sum, from time to time to be fixed, per head, annually, for their cattle; to receive ten crowns for each that should die of distemper.—*Weskett*.

Towards the close of the last century, and during the first half of the present, there was scattered over the country innumerable asso. for the mut. ins. of cattle. Many of these were simply “Cow Clubs,” while some took a wider scope. They were simple asso., having no defined legal constitution; conducted mostly on the principle of mut. contribution; and generally broke down upon any special emergency arising.

In 1844 the *Farmers and Graziers Cattle Ins. Co.* was founded. It carried on bus. until 1853, when it passed into liquidation; many of its claims, we believe, never having been paid.

In 1845 the *Agriculturist Cattle Ins. Co.* was founded. We have already given its hist., which was very remarkable, in some detail under its alphabetical title. We have also quoted the rates of prem. charged by it in the first instance. The Co. rapidly acquired a considerable bus., absorbing several of the then local cattle ins. cos., and leading to the dissolution of many of the provincial clubs, many hundreds of which were in existence at the date of its advent. A few years of practical working were necessary to enable the Co. to consolidate its experience. The following is the scale of prems. adopted by the Co. in 1851 :

CATTLE.—Dairy Cows, 7 $\frac{1}{2}$ d. in the £; Feeding Stock, 6d.; Young Stock under 1 year

old, 1s. in the £; above 1 year, 7½d.; Bulls not exceeding value of £20, 1s. in the £; exceeding £20, and not exceeding £40, 1s. 3d. in the £. Prize Bulls, 2s. and upwards in the £, according to value and other circumstances; Town Cows from 1s. 6d. to 2s. in the £, dependent on the mode of lodgment and general management. Working Oxen 7d. in the £.

HORSES.—Agricultural, not exceeding £30 value, 7½d. in the £; exceeding £30, 9d. in the £; Carriage Horses and Hacks, 9d. and 1s. as they were under or over £30 in value. Mares for breeding, 9d. and 1s. also; Mules and Ponies, 9d. in the £; Town and Dray Horses, 1s. and 1s. 3d. as under or over £30 in value. Race Horses, Hunters, Military Horses and Entire Horses, 2s. and upwards in the £, according to value and apparent risk. Miners' and Contractors' Horses, 1s. in the £ and upwards, dependent on the nature of their employment.

SHEEP.—Breeding Ewes, 1s. 6d. in the £; Feeding Sheep, 1s.; Rams, 1s. 6d.; Prize Rams, 2s. and upwards. Protection against rot according to estimated risk.

PIGS.—Breeding Sows, 2s. in the £; Feeding or Store Pigs, 1s.; Boars, 1s. 6d.; Prize Boars, 2s. N.B.—A single animal may be ins.

The following were the regulations as to *compensation*.

In order to provide a more equitable compensation for losses amongst agricultural dairy cows in the several periods of the year, when they are usually at materially different values, the directors have decided to divide the year into two equal portions; the first extending from the 1st Jan. to 30th June; and the second from the 30th June to 31st Dec. In the first half year the compensation will be *two-thirds* of insured value, and *one-third* of salvage; and in second half year the allowance will be *four-fifths* of the ins. value, and *one-fifth* of the salvage; or, if preferred, *three-fourths* compensation, and *one-fourth* salvage, will be allowed for the whole year.

On losses among young stock, compensation will be uniformly made to the extent of *two-thirds* of the ins. value, and *one-third* of the salvage.

On losses among feeding cattle, *three-fourths* of the ins. value and *one-fourth* salvage will be allowed.

On losses among horses *two-thirds* of the ins. value will be paid, subject to a deduction of £1 on each animal as for salvage.

For all other animals not yet enumerated, the compensation will be uniformly *two-thirds* of the ins. value and *one-third* of the salvage.

In cases of loss by pleura-pneumonia, inflammation of the lungs, consumption, or black-leg, £10 p.c. calculated upon the animal ins. will be deducted from the claim.

N.B.—At the same rates of prem. parties may stipulate to receive uniformly one-half of the ins. value and the whole of the salvage, excepting £1 each on cattle, and 10s. each on young stock, and without any extra deductions for losses through pleura-pneumonia or any other disease.

The following were the general conditions of ins. instituted by this Company:—

1. Every stock proposed for protection must be examined and valued by the Co.'s inspector previous to any proposal being made to the board.

2. Should the epidemic or any contagious disease have been among a stock, such stock must have been free at least 3 months before it can be admitted, except under special agreement.

3. Should the proposal and the report upon the stock be approved by the directors, an agreement will be forwarded to the agent, who must be paid the prem. within 14 days from the date of the same, otherwise it must be returned to the head office within 21 days from the date of the said agreement to be cancelled. In default of such transmission by the agent, he will be charged with the prem. due thereon, as for a completed transaction.

4. Under no circumstance will a proposer's stock be protected till the entire amount of prem. shall have been paid.

5. **ILLNESS.**—In case of any illness or accident occurring among the stock protected, the owner must give immediate notice in writing to the inspector. The inspector will visit the diseased animal, and, if contagion be feared, he will order such an animal to be separated from the rest of the stock; and the owner must keep it so separated till it recover or be disposed of. The form of notice may be as follows: Sir,—I beg to inform you that one of my . . . was taken ill on the . . . instant.—I am, Sir, your obedient Servant, . . . —To Mr. . . . , Inspector for . . .

6. Should the inspector be of opinion that the animal cannot recover, he may order it to be slaughtered or sold (except during the last month of assu., when the consent of the agent also must be obtained). If such order be given, the owner must comply with it, and he will receive the same compensation as if it had died from disease or accident.

7. **MEDICAL TREATMENT.**—In all cases of illness the owner must treat the animals at his own expense, and is bound to pay the same attention to their general health and safety as if they were not ins., under the penalty of forfeiting his agreement. But if the inspector think that the animals be neglected or improperly treated, he may give such orders for additional advice or variation of treatment (at the owner's expense) as may appear to him advisable, and such orders must be complied with.

8. **DEATHS.**—In case of the death of an ins. animal, the owner must give immediate notice of the event to the inspector, who will attend to witness the sale of the skin and carcase, for which the best prices must be obtained, and the amounts paid to the owner, who must annex to the claim paper a voucher for such amount, signed by himself and the purchaser.

9. The claim paper must be filled up and delivered to the inspector within 14 days after the death, or the claim will be disallowed; but being duly received by him, he must certify its accuracy and deliver it to the agent within 21 days of the death, when being further certified by the agent, it must be transmitted to the head office, so that it may arrive there within 1 calendar month from the date of death.

10. No horse must be slaughtered, or sold (if compensation be the object), without the sanction of the Secretary.

11. No claim for loss will be recognized unless the full amount of prem. shall have been duly paid; nor can any claim be allowed for a loss arising from disease, which shall have commenced within 21 days after the date of the proposal. It is also indispensable to the estab. of each claim that the insurer shall strictly comply with the conditions printed at the back of his agreement [policy].

12. No compensation will be given for stock stolen, maliciously or feloniously haughed, maimed, poisoned, or slaughtered, or for those injured or destroyed in civil tumult, by fire or lightning, which are insured against by fire offices.

13. If a protected party knowingly and wilfully introduce a diseased animal into his stock, he forfeits his agreement.

14. **SUBSTITUTIONS AND ADDITIONS.**—Parties insured may sell, exchange, or substitute animals during the term of their agreement. In every case of substitution, immediate notice must be given to the inspector, who must certify, in the prescribed form, that the animals so substituted are in good health; if of less value than those for which they are substituted, it must be stated, that the proportion of that value will be paid in case of loss.

15. If an insurer's stock be increased in number, an additional proposal must be made, and the usual forms complied with, before they can be protected by the Co. Immediate notice of any additions to stock must be given to the inspector, and 21 days must elapse before they are protected.

16. Animals substituted in the place of such as have died and been paid for by the Co., or slaughtered by their order, for the benefit of the owner, will also be subject to a fresh agreement, and notice must be given to the inspector, that an additional proposal may be filled up, and the rate paid.

17. Animals introduced as additions or substitutions into a stock, which has in it any infectious disease, will not be protected till after the whole stock has been free from it for 3 months.

18. The *whole* of the animals of any particular class, on a farm, must be insured. If any such are found among the stock, after the agreement is issued (which are not insured), the agreement will be void.

19. The ins. will only extend to cattle on the farm or lands specified in the agreement, unless permission shall have been obtained from the directors to remove them to other lands or farms.

20. All losses will be paid immediately after the claim has been established to the satisfaction of the directors (on the allowance of discount), or at the expiration of 3 months, without discount.

21. *Glanders and castration may be ins. against by special agreement.*

22. Any continuous insurer not having had a loss in the previous year, will be allowed 5 p.c. bonus on his new prem. to an amount not exceeding the previous year's prem.

23. If any party attempt to defraud the Co., or keep back any information which the directors should be made acquainted with, he will forfeit all claim for compensation, and not be admitted to protection again; and if any positive fraud be detected, the offender will be prosecuted.

24. Should the insured have reason to complain of irregularity in the management of the bus. of the Co., it is requested that immediate communication be made to the Board of Directors.

In 1846 a project was before the Gov. of Belgium that certain branches of ins. bus. should be undertaken by the State. A Commission was appointed, and reported in favour of the proposal, and suggested the Ins. of Cattle should be included in the project. A further Commission was appointed, and reported against the project, mainly for the following reasons: The varying value and nicety of calculation required to fix the sum which ought to be paid, when, in some cases, the loss might be caused by the carelessness of the proprietor; and in other cases might occur by epidemics, in spite of the utmost vigilance and skill. The difficulty of proving what was the cause of death. And lastly the uncertain manner in which epidemics spread—one district being exposed to severe losses, whilst another is entirely free.

In 1847 the *United Kingdom Cattle Ins. Co.* was founded, and carried on bus. for several years. In the end many of its claims were left unpaid.

About 1848 a scheme was also brought forward in France for the Gov. to undertake the bus. of ins., including Cattle Ins. It was proposed to charge a uniform prem. of $1\frac{1}{2}$ p.c. upon the estimated saleable value of all live stock. The energy of the offices repelled this attempt. [See 1857.]

About 1848 or 1849, there was founded at Pfalz, in Bavaria, a Cattle Ins. Co. At a meeting held at Neustadt in March, 1850, it was reported that the Co. consisted of 3072 shareholders, with a cap. of £60,537. The number of horses insured was 2285; cattle, 7042; sheep and goats, 383; and swine, 245. The losses indemnified were: 58 horses for £330; 102 cattle for £292; 3 goats for £1 5s; and 2 swine for £2 13s. 6d. From these figures the Eds. of the *Assu. Mag.* constructed the following T. [vol. i. p. 349]:

	No.	Lost.	Value.	Losses.	Per Cent.	Average value of each.
Horses	2285	58	£13,000	£330	2.54	£5.7
Cattle	7042	102	20,160	292	1.45	2.86
Sheep and Goats	383	3	160	1.25	.78	.42
Swine	245	2	328	2.675	.82	1.33
	9955	165	33,648	625.925	1.86	3.79

In 1849 was founded the *Norfolk Farmers Ins. Co.*, which speedily took a leading position in the bus. of Ins. Cattle; and which now is enabled to say that it was the only one of its class which has "withstood the plagues of pneumonia, or lung disease, as well as the more recent cattle plague." We shall give a full hist. of this Co. under its alphabetical title.

In 1849 was also founded the *North Staffordshire Mut. Cattle Ins. Co.*

In 1849 or 1850 a co. was projected for insuring cattle while travelling by railway. We believe it made no progress.

A paper prepared by Herr E. A. Masius, and submitted to the Convention of Actuaries held in Lond. in 1851, contains the following passages:

Cattle ins. is of all kinds of ins. [practised in Germany] the one which has the least prospered, or been able to acquire the confidence necessary to the management of the bus.; and I would again repeat . . . that it can scarcely be maintained so as to indemnify all cases of loss. Besides a very laborious and expensive management, it requires a continual control, which cannot be kept up, seeing that the mort. is in general too high, and that the objects insured cannot support the heavy charges. When cattle are uninsured, far more circumspection is applied by the owners to their preservation and care, and losses are much less frequent; besides, with the exception of those arising from epidemic diseases, they are lighter to bear, as the diminution is compensated by the young animals reared, and

considerable net proceeds accrue to the proprietors from the surviving stock. The more extensive breeders in healthy pasture lands and climates consider it therefore preferable to be self-insurers, and those who are less favourably situated are unable to support a co., as the prem. to be contributed amount to too high a sum.

These are the reasons why cattle ins., which I first introduced into Germany in the year 1830, has not succeeded in raising itself in the same degree as other branches of ins.; and why no co. of the kind has reached the tenth year of its existence. At present there are in Germany only two subsisting sos. on the mut. plan; one of them, since 1846, at Darmstadt, for the province of Starkenburg; and the other since 1848 at Cologne, with the title of *Cologne and Munster Cattle Ins. Union*. Both have Gov. protection and corporate rights; nevertheless they have but recently narrowly escaped the fate of their several departed sister asso. The *Cologne-Munster Union*, in the year 1850, had ins. a sum of £145,318. The receipts of prem. were £3950; expenses of management, £1289; losses, £3680—reckoned at two-thirds of the value as estimated for compensation. The cases of death may thence be taken at about 4 p.c.—a rate of prem. which in fact only such farmers would take care to lay out as are in hopes of gaining more by such a course.—*Assu. Mag.*, vol. ii. p. 119.

In 1853 was founded the *National Live Stock Ins. Co.*, which carried on bus. until 1862, when its connexions merged into the *Norfolk Farmers*. In the same year was founded the *General Live Stock Ins. Co.*, which, after carrying on a considerable amount of bus., passed into a disastrous liquidation in 1857. Its bus. connexions were trans. to the *Lond. and County*.

In 1854 the *London and County Hail and Cattle Ins. Co.* was founded, and continued in bus. until 1859, when its connexions were trans. to the *Norfolk Farmers*.

In 1857 a scheme was propounded for a *General Bank for Agricultural Ins.* in France. A branch was to be devoted to the Ins. of Cattle. The details were worked out in a most elaborate manner. We can but give a brief abstract of them:

Class I. was to include horses, mules, asses, oxen employed in agricultural labour, milch cows at pasture, or stalled in the country; goats, horses, and mules for saddle or harness. The aggregate value of these was estimated at £40,000,000; the proposed prem. was 1 p.c., which would yield £400,000 p.a. Brood mares, cows, etc., were to be of the same class, and same prem. Their value was placed at £3,840,000, giving giving in ann. prem. £38,400.

Class II. comprised pigs. The aggregate value was put at £8,000,000, which at 1 p.c. prem. would produce £80,000.

Class III. applied to sheep and lambs. Value, £16,000,000; proposed rate, 2 p.c.; ann. prems., £320,000.

Class IV.—Horses of the gendarmerie and officers of the army. Estimated value, £160,000; rate, 1½ p.c.; prems., £2400.

Class V.—Horses or mules for riding or draught; oxen for draught; stallions, bulls, and rams; milch cows kept out of the towns. Aggregate value, £6,000,000; rate 2½ p.c.; prems., £135,000.

Class VI.—Horses and mules belonging to carriers, the mail post diligences, public vehicles or barges, or livery stables; milch cows kept in towns, or their environs. Value, £6,000,000; rate, 3 p.c.; prems., £180,000.

It is remarked that "the risk of mort. should not be exclusively calculated on the class of animals employed, or the nature of the work in which they are engaged; but regard should be had, to a certain extent, to the localities which they inhabit, and especially to the conditions of nourishment, care, and shelter which they receive." Regarding the rates, it is remarked:

The rate may be diminished by one-fifth only if the commune during the same period [since 1826] has been only once visited by an epidemic, and where the health of the cattle is generally good. The rates may be increased by one-fifth, if since 1826, the commune has been visited by epidemics 2 to 4 times; by two-fifths if from 5 to 8 times; by three-fifths if from 8 to 12 times; by four-fifths, if from 13 to 18 times; and if more than 18 times, the rate may be doubled.

Of cattle and other agricultural stock, valued at £80,000,000, only £400,000 was stated to be covered by ins. The cattle insured against epidemics by the then existing sos. was charged at the rate of 4½ p.c. of its value; and yet "for the most part the indemnity is less than the loss." By the scheme proposed the rate was to be 1·24 p.c. of the value of agricultural stock. The scheme was not carried out.

Various Cos. for Cattle Ins. have been founded in France, of which we shall give some account under FRANCE.

In 1857 the *Pontefract and West Riding Horse and Cattle Ins. Co.* was founded, and continues to carry on bus.

About 1859 or 1860, a remarkable circumstance was reported regarding the vaccination of Cattle. It was stated that of 3 Cattle Ins. Cos. in Holland, one made a practice of having all the cattle it ins. vaccinated as a safeguard against pneumonia; another had vaccination performed as soon as the disease had broken out in the animals' stalls; and the last took no precaution of the kind. The results were said to be, that the first co. in a certain period lost 6 p.c. of the insured cattle; the second co. 11 p.c.; and the third co. 40 p.c. ! We have said elsewhere, this subject of vaccination of cattle is worthy of further consideration.

In 1862 the *Provincial Horse and Cattle Ins. Co.* was founded at Nottingham, and continued in bus. down to 1867.

In 1865 there were founded the following offices: (1) *Altrincham Cattle Plague Ins. Asso.* (2) *Banbury Cattle Plague Ins. Asso.* (3) *County Cattle Ins. Co.* (Hertford).

(4) *Kendal Union Cattle Ins. Co.* (5) *South Lancashire Cattle Ins. Co.* (6) *Warwickshire Cattle Ins. Co.*

In 1866 there were founded the following offices: (1) *Langport Union Cattle Ins. Co.* (2) *Tetbury Mut. Cattle Ins. Asso.* (3) *West Dorset Cattle Ins. Co.*

In 1866 there was passed the 29 & 30 Vict. c. 34, the object of which was to facilitate the formation of Local Cattle Ins. Asso., which were so much needed in consequence of the prevailing disease. The main provisions of this Act were: (Sec. 1.) Notwithstanding anything in 18 & 19 Vict. c. 63, relating to F. Sos., a so. may be estab. for the assu. to any amount against loss by death of neat cattle, sheep, lambs, swine, and horses, from disease or otherwise; and neither the provisions in sec. 9, that no member shall subs. or contract for a sum payable on death or any other contingency exceeding £200, nor sec. 38, should apply to any such so. estab., or which might thereafter [11 June, 1866] be so estab. for such purpose. (Sec. 2.) All contributions, prems., and other payments payable by any member of any such so., under the rules thereof, in respect of any assu. effected by him, shall be considered as a debt due by him to the So., and shall be recoverable as such in the County Court of the district within which the usual or principal place of bus. of the So. is situate. We are not aware of many asso. being formed under these provisions.

In 1869 there was founded the *Lake Districts Farmers Cattle Ins. Asso.* (Cumberland).

In 1870 the graduated scale of stamp duties on cattle ins. pol. was entirely abolished, and a fixed charge of 1d. on each pol. adopted in its stead. The amount had been ann. decreasing for several years previously: thus in 1865 it realized £535 14s.; in 1866, £506 or. 10d.; in 1867, £70 6s. 8d.; in 1868, £38 1s. 6d. The stamps had always been charged to the insured. In 1849 there had been a monstrous decision given in the Court of Exchequer, in the case of *Att.-Gen. v. Cleobury*, viz. that a pol. on the lives of cattle was an ins. on lives within 55 Geo. III. c. 184, and therefore liable to the same stamp duty as was paid on a life pol.

In *Austria*, in 1871, there were in existence the following offices for the ins. of cattle: (1) *Apis Cattle Ins. Co.*, in Vienna; (2) *Bohemian Mut. Cattle Ins. Bank*, at Prague; (3) *Cattle Ins. Co.* in Vorarlberg; (4) *Mutual Cattle Ins. Union* of the So. of Milk Farmers in Vienna; (5) *Mutual Horned Cattle Ins. Union*, at Spitz, Lower Austria; (6) *Prometheus Mut. Ins. Union*, at Linz, Upper Austria.

In 1872 there has been founded under powerful auspices the *Scottish Farmers Live Stock Ins. Co.* A scheme of Mut. Cattle Ins. is also under agitation, to the promoters of which the preceding facts may be suggestive and useful.

In most of the modern cattle ins. asso. the ins. of horses against death from disease is included. The *Norfolk Farmers Co.* have recently introduced the feature of ins. horses against death by violence. We shall speak of this feature more fully under HORSES, INS. OF.

We may take the opportunity of correcting an error in reference to the rate of agency commission allowed on *Cattle ins.* Instead of 12½ to agents, it has been 5 p.c. to agents, and 7½ to inspectors; the same on renewals. The *Norfolk Farmers* now pays 10 p.c. to agents on new prems., and 5 p.c. on renewals—paying the inspectors by fees.

CATTLE PLAGUE.—A disease in cattle, considered to be identical with the epizootic malady known on the European Continent as the Rinderpest, or Russian Steppe Murrain. There are in fact many kinds of Cattle Plague. Dr. Farr classes them all under the generic term *Bovia*, from the Greek. See CATTLE, DISEASES OF.

CAUSE OF DEATH.—Cases not unfrequently arise in the practice of L. and of accident ins., in which the ascertainment of the real cause of death becomes of very great importance. In L. ins. almost the only question which can arise is whether the death arose from suicide. In accident ins. the range is much wider. A man is riding along the road, and falls off his horse. He is picked up dead; but the external marks of injury are very slight. The coroner's jury sit, and of course decide that the man was killed by the fall. The ins. office is dissatisfied, and insists upon a *post-mortem* examination. The doctors find the cause of death was apoplexy, a fit, or sunstroke. All of these are causes of death outside the conditions of the pol., i.e. they form no part of the risk insured against. Again, a man slightly injures his foot, or his hand; the injury is so slight that he takes no especial notice of it. In a few days *erysipelas* sets in, or *pyæmia* shows itself, and he dies. But *erysipelas* and *pyæmia* are very properly excluded from the causes of death covered by an accident ins. pol.—they arise from a debilitated condition of system, or impure blood, and are not “consequent upon” the injury sustained; inasmuch as out of 100 persons injured in a similar manner, only one will die from either of these causes—showing therefore, according to all reasoning, that the cause of death lay in the man injured, and not in the nature of the injury sustained. Various other instances occur, as “rupture,” after a slight fall or shake, etc., etc.

There are various decisions in the English Law Books, which have been [ACCIDENT INS.], or will be, referred to in these pages, as bearing upon deaths of this class.

In the case of *Miller v. Mutual Benefit L. Ins. Co.*, heard before the Supreme Court of Iowa (U.S.), in 1871, the ruling was as follows:

When several causes contribute to death as a result, it may be externally difficult to determine which

was the remote and which the immediate cause; yet this difficulty does not change the fact that the death is to be attributed to the proximate, and not to the mediate cause. Nor is the difficulty in questions of this kind any greater than that which arises in questions of negligence, contributory negligence, and many others which are constantly the subjects of judicial investigation. [See also DEATH, CAUSES OF.] [CERTIFICATE OF CAUSE OF DEATH.]

CAUSTON, WILLIAM REAY, was for many years a most active agent in Gloucester for the *Norwich Union Fire and Life offices*.

CAUTIONER.—A surety. The term is more particularly used in Scotland.

CAVE, STEPHEN, M.P., Banker, Bristol; ostensibly the author of the "Life Assu. Cos. Act, 1870."—Mr. Cave filled the office of Vice-President of the Board of Trade under the Conservative Administration, 1866, and while in that position [about 1868] introduced a motion to the House of Commons praying for an inquiry into the mode of conducting ins. bus. in Gt. Brit. The belief then was that the measure was aimed at the *Albert and European offices*. The inquiry was not granted; and whether it would have been productive of any good is therefore only problematical. In 1872 he moved the House for an inquiry into the causes which had led to the failure of those offices; but here again he was defeated. Mr. Cave is not officially connected with any ins. office.

CAVE, THOMAS, M.P., was Man. Director of the *Anchor F. and L. Ins. Co.* from 1855 down to its amalg. in 1857. He made great efforts to place the Co. on a solid foundation, but without success. Mr. Cave was for a short period after the amalg. connected with the *Bank of Lond.*, etc., Ins. Co.

CAVEAT.—A warning or caution—literally, *that he take heed*. A process used in the Ecclesiastical Courts to prevent the proving a will, or the granting of administration, or the institution of a parson. When a *Caveat* is entered against proving a will or granting administration, a suit usually follows to determine either the validity of such will, or who has a right to administer. There are some other cases in which a *Caveat* is resorted to, as a means of raising an issue, or delaying proceedings.

CAXTON LIFE ASSU. SO., founded in 1854, with an authorized cap. of £100,000. The orig. prosp. said :

The intrinsic value of L. assu. is now so universally admitted, that he whose income depends on mental or physical exertion for making provision for those near and dear to him, cannot be held blameless in not availing himself of it, especially as its advantages may be secured by the exercise of a little self-denial, even where incomes are limited and precarious.

The Gov. under which we live, duly appreciating the importance of L. assu., has wisely reduced the stamp duties hitherto imposed, as an encouragement to its more general adoption. . . .

Although the title of a so., provided it indicate the objects contemplated, is usually deemed but of little import, yet some value is attached to that of the "Caxton," from the fact that the literary and commercial world have alike benefited by his exertions. Caxton introduced into England the press—the most powerful engine in the universe; and as a merchant, by his diplomatic skill, opened to Brit. enterprise the ports of Holland and others, which for many years previously had been closed against it. . . . For these and other signal services, on Caxton were conferred various marks of Royal favour.

"Every description of L. assu. transacted, including residents in the U.K. and in foreign countries." Then, under "advantages of this So.," there was the following :

Non-forfeiture of pol. Where pol. on which 3 years' prems. shall have been paid, and not being in connexion with loans, are discontinued, from whatever cause, *the whole amount of the prems. which have been paid will be returned whenever the life shall drop, to the representatives of the assured, after deducting one year's prem. and expenses*; such return however will be lost unless claim be made within 6 calendar months after decease of the insured.

"Pol. never disputed—except in cases of fraud." "Half the prem. may remain on credit for 5 years." Lives "under average of full health" ins. [DISEASED LIVES.] [SUBSTITUTION OF LIVES.] [BUILDING SO. INS.] [LOANS.]

We believe the founder of this Co. was Mr. Thos. Pott; Mr. James Charles Hardy was Man. Director and Sec.; Mr. W. E. Hillman, Consulting Act.

In 1856 the Co. passed into a winding up, under the Court of Chancery, having been eaten up with printing and other preliminary expenses.

CAXTON LIFE, FIRE, LOAN, ANNUITY, AND GUAR. SO., projected in 1852, but did not get beyond prov. regis.

CAYAGIUM.—A duty or toll paid to the king for landing goods at some quay or wharf.—*Cowel*.

CAZENOVE, JOHN, was sec. of *Family Edowment* from 1843 to 1858.

CELESTIAL GIFTS.—Hufeland speaks of *Light, Heat, Air*, as the "three celestial gifts, which with great propriety may be called the friends and guardian spirits of life." [AIR.] [COLD.] [HEAT.] [LIFE.] LIGHT.]

CELIBACY [from *cælebs*, unmarried].—An unmarried, or single state of life. The effect of Celibacy upon the duration of life has been the subject of much comment and some observation. We shall consider that part of the case under MARRIAGE, INFLUENCE OF.

The monastic life was preached by St. Anthony, in Egypt, about A.D. 305. The early converts to this doctrine lived in caves and desolate places till regular monasteries were founded. The doctrine was rejected in the Council of Nice, A.D. 325. Celibacy was enjoined to bishops only in 692. The Romish clergy generally were compelled to a vow of celibacy in 1073. Its observance was finally estab. by the Council of Placentia, held in 1095. The privilege of marriage was restored to the English clergy in 1547. The marriage of the clergy was proposed, but negatived, at the Council of Trent in 1563.—*Vincent*.

Among the illustrious philosophers of antiquity the following were unfriendly to matrimony : Anaxagoras, Democritus, Diogenes, Dion, Epicurus, Heraclitus, Plato, and Pythagoras ; and among the modern the following : Akenside, Angelo (Michael), Bayle, Bentham (Jeremy), Boyle, the three Caraccis, Collins, Drake (Sir Francis), Essex (Earl of), Fénelon, Gibbon, Goldsmith, Gray, Hampden, Handel, Harvey, Haydn, Hobbes, Hume, Leibnitz, Locke, Malthus, Newton, Pascal, Pitt, Pope, Reynolds (Sir Joshua), Smith (Adam), Thomson, and Wolsey. [POPULATION.]

CELLAR DWELLINGS.—The number of persons living in cellars in some of our large towns was found to be so considerable, and the direct mort., as well as the danger to the public health, so great in consequence, that the Legislature took up the subject, and by means of the Public Health and Local Government Acts, and the Metropolitan Management Acts, have provided remedies for lessening these evils to a very great extent.

CEMETERY [from the Greek, *to set to sleep*].—A place of burial, differing from a churchyard by its locality and incidents. By its locality, as it is separate and apart from any sacred building used for the performance of Divine service ; by its incidents, that inasmuch as no vault or burying-place in an ordinary churchyard can be purchased for a perpetuity, in a cemetery a permanent burial-place can be obtained.

CEMETERIES.—The ancients had not the unwise custom of crowding all their dead in the midst of their towns and cities, within the narrow precincts of a place reputed sacred, much less of amassing them in the bosom of their fanes and temples. The burying-places of the Greeks and Romans were at a distance from their towns, and the Jews had their sepulchres in gardens (John xix. 41), in the fields, and among rocks and mountains (Matt. xxvii. 60). The present [recent] practice was introduced by the Romish clergy, who asserted that the dead enjoyed peculiar privileges by being interred in consecrated ground.—*Haydn*.

Some 300 years ago (1552) Bishop Latimer, contrasting the custom of the citizens of Nain with those of the citizens of Lond., said :

And here you may note, by the way, that these citizens had their burying-place without the city, which no doubt is a laudable thing, and I do marvel that Lond., being so rich a city, has not a burying-place without, for no doubt it is an unwholesome thing to bury within the city, specially at such a time when there be great sickness so that many die together. I think that many a man taketh his death in Paul's churchyard, and this I speak of experience ; for I myself when I have been there to hear the sermons have felt such an ill-favoured unwholesome savour that I was the worse for it a great while after. And I think no less that it be the occasion of much sickness and diseases ; therefore the citizens of Nain had a good and laudable custom to bury their corpses without the city, which ensample we may follow.

Under BURIAL we have already given many details regarding modern legis. on the subject of burials ; we need not therefore repeat them here. Up to 1865 there had been raised, under the authority of various Acts, no less a sum than £1,400,000 for providing parochial cemeteries. That sum is now largely increased. Lond. is now well provided with cemeteries : the first, Kensal Green, 32 acres, was opened just 40 years since—2nd Nov., 1832. The others as follows : South Metro. and Norwood, 40 acres, 1837 ; Highgate and Kentish Town, 22 acres, 1839 ; Abney Park, Stoke Newington, 30 acres, 1840 ; West Lond., Kensington Road, 1840 ; Nunhead, 50 acres, 1840 ; City of Lond. and Tower Hamlets, 30 acres, 1841 ; Lond. Necropolis and Nat. Mausoleum, Woking, 2000 acres, 1855 ; City of Lond., Ilford, 1856. More recently the Gt. Northern.

That the general estab. of cemeteries is an active element in improving the health of the people, is a proposition without a negative. [BURIAL.] [PUBLIC HEALTH.]

CENEGILD (from the Saxon).—An expiatory mulct paid by one, who killed another, to the kindred of the deceased.

CENSUS.—A numbering of the people. The term originated in Rome, being derived from *censors*, upon whom fell the duty of numbering the people. Moses numbered the Israelites, B.C. 1490 ; David, B.C. 1017. The numbering by David was imputed to him as a crime, because he had done it in a spirit of pride and vain-glory. The Greeks had a census, prob. introduced by Solon, between B.C. 638 and 658. Certainly previously to Solon no census had been instituted at Athens. When instituted there it was for the purpose of determining the rights of the citizens by property, rather than birth, as previously. Demetrius Phalereus is said to have taken a census of Attica, B.C. 317.

Rome from a very early period had a census of its citizens. It is believed to have been instituted by Servius Tullius, who commenced to reign as its 6th king in B.C. 578. Lenglet du Fresnoy says the first census of Rome was taken B.C. 566. The censors, or magistrates, to whom the task of preparing the census was entrusted, were amongst the principal officers of the State ; indeed the office was regarded as so honourable and important that it was an object of the highest ambition. Every Roman citizen was obliged to disclose his name, his age, the place of his residence, the name and age of his wife, the number of his children, slaves, and cattle, the value of his property, and the class and century [legion] in which he was enrolled. The declaration of the parties was confirmed by an oath ; and in the event of its being discovered that they had made a false return, they were punished by the confiscation of their property, and the loss of liberty. Those who neglected to enrol themselves in the census were subjected to the same punishment ; it being held, as Cicero has informed us, that an individual failing to enrol himself renounced by that act his right of citizenship, and rendered himself unworthy of freedom. In the

imperial city the census was taken by the censors in person. In the provinces the citizens made their declarations before the provincial magistrates, according to a form or schedule transmitted to the latter by the censors. All these lists being returned to Rome were reduced to a tabular form, so that the total number of Roman citizens, and the slaves and other property possessed by each, could be ascertained at a single glance. These records were preserved in the Temple of Venus Libitina; but none of them have been preserved to us in detail.

It will be discerned by the thoughtful reader that such exact details were prob. required for other purposes than a mere estimation of the number of the pop. It was so. The returns, obtained as described, were required and used for the fiscal purposes of the State; while they also had a distinct value in relation to military organization. Those who desire more details regarding the mode of taking and the purposes of the censuses of both Greece and Rome may, with advantage, consult *Smith's Dict. of Greek and Roman Antiquities*.

In the first instance the Roman census was taken every 5 years. After a time a good deal of indifference arose regarding it; hence it came to be taken only once in 10 years; and later, but once in 15 years. It is said, upon apparently good authority, that only 75 enumerations were made in the 630 years from Servius to Vespasian; after which it was entirely discontinued. Originally, after the census was taken in Rome, a sacrifice of purification or lustration took place. From this the term of 5 years came to be called a *lustrum*. The two great jurists, Paulus and Ulpian, each wrote works on the census in the imperial period.

It is stated that the Paternal Government of Peru has from a very early date kept a regis. of all births and deaths throughout the country, and has caused exact returns of the pop. to be made *every year* by officers appointed by the State.

One of the earliest methods employed with a view to numbering the people in Gt. Brit. was to enumerate the *Houses*, and then to multiply the houses by the number of people supposed to be occupying them. This method has been frequently resorted to, both here and in Ireland. Another aid was called in. In 1662 the *Hearth or Chimney Tax* was first imposed. The returns of this tax were supposed to elucidate the number of *Families*. After the Revolution of 1689, when the taxing of fireplaces was abolished, the computers fell back upon the returns of *House and Window Duties*. The *Poll Tax* had been levied on too small a portion of the pop. to be of much value for such estimates. It has been frequently shown that none of these methods could be at all depended upon. The books containing the account of hearth money were long since lost, and it is by no means certain whether Dr. Davenant, in stating the number of houses in England and Wales in 1690, as given in the *Hearth Books*, really meant the buildings in which families lived, or the families themselves. The returns of the House and Window duties were still less worthy of credit. The collectors were only required to make out and return to the Commissioners of Assessed Taxes, lists of houses within their respective collections chargeable with the duties in question. All cottages exempted from the usual taxes to church and poor were also exempted from the house and window duties; and there was no obligation on the officers to return an account of their numbers. The earlier returns of assessed taxes have never been regarded as very accurate. All these points are necessary to be considered in dealing with the various estimates made in the absence of the authority and the means for an exact enumeration.

Again, the regis. of births and burials have frequently been resorted to as means by which to estimate the magnitude of the pop. In applying them to this purpose, districts in various parts of the country were selected, forming as nearly as possible a fair average of the whole; and a census being taken of the pop. in them, it is learned, by dividing that pop. by the number of births and the number of deaths, the proportion which they respectively bear to the whole number of inhabitants in the districts that have been surveyed; and hence it followed, that to learn the pop. of the entire kingdom it was only necessary to multiply the total number of births, or the total number of burials, as given in the regis., by the proportion which either of them had been thus proved to bear to the whole pop. Thus, supposing that the average proportion of deaths to the pop. had been ascertained, by examinations being made in different parishes, situated in different parts of a country, to be as 1 to 45 or 50, the entire pop. would plainly be equal to the entire number of deaths in a year multiplied by 45 or 50; or if the proportion of births to the whole pop. had been ascertained, in the same way, to be 1 in 28 or 30, the pop. would be the product of the yearly births by 28 or 30. It is plain, therefore, that if the regis. of births could have been relied on as accurate, this would form a compendious and not unsatisfactory mode of forming an estimate of the pop. But the early regis. were in almost all cases very far indeed from being accurate. [PARISH REGIS.]

But though the regis. of births and deaths were kept with the most perfect accuracy, it would still be no easy matter to determine the exact amount of the pop. by their means. What may be considered the average and ordin. rate of mort. in a country—and the same thing is true of the average and ordin. proportion of births—is liable to be deeply affected by the occurrence of scarce and calamitous years, and conversely [FOOD, ITS INFLUENCE ON LIFE AND DEATH]; and unless all such exceptional circumstances were allowed for, error of greater or less amount must invariably be found in such estimates.

The earliest country in modern Europe which adopted a census of its pop. by actual enumeration was *Sweden*. A census of its entire pop. was taken in 1749, and again 1752 and 1755. [SWEDEN.]

One of the earliest English writers who appears to have discerned, or at least to have pointed out, the value of an exact enumeration of the people was Corbyn Morris, who in his *Obs. on the Past Growth of the City of Lond.*, etc., first pub. 1751, suggested a B. of mort. arranged so as, after a series of years, to furnish such information. He says :

Under the B. of mort. proposed, one noble instance of information, which might clearly be drawn from it at any period, readily suggests itself. This is, *that the total number of persons living of all ages, and also the respective numbers living of each age, might from hence accurately be ascertained* : supposing this bill to have been kept for a time past, equal to the utmost extent of life, and also the accession of foreigners during that time to have been nearly equal to the egression of natives.

De Moivre, in the 3rd ed. of his *Doctrine of Chances*, 1756, speaks of the importance of

Taking the numbers of the living, with their ages, through every parish in the kingdom : as was in part ordered some time ago by the Rt. Rev. the Bishops ; but their order was not universally obeyed—for what reason we pretend not to guess. Certain it is that a *census* of this kind once estab., and repeated at proper intervals, would furnish to our governors, and to ourselves, much important instruction, of which we are now in a great measure destitute ; especially if the whole was distributed into classes, to *married* and *unmarried* ; *industrious* and *chargeable* poor ; *artificers* of every kind ; *manufacturers*, etc. ; and if this were done in each county, city, and borough separately, that particularly useful conclusions might thence be readily deduced ; as well as the general state of the nation discovered ; and the rate according to which human life is wasting from year to year.

In 1783 the War of Independence in the American Provinces terminated. A Constitution had to be provided for the new U.S. In that Constitution pop. was made the basis of representation. This involved a periodical census of the people. It was resolved that this should be taken every 10 years. The first census of the U.S. was taken in 1790. The pop. was then returned at 3,929,827.

Various writers, many of whom will be noticed under POP. and various other heads, continued to urge the importance of a correct enumeration of the people of Gt. Brit. ; and at length urgency became so great that the Gov. yielded. The first systematic enumeration of the people of Gt. Brit. was therefore fixed to be taken in 1801. It must not be supposed that the proposal was carried through Parl. without opposition. On the contrary, it excited a good deal of alarm. Many considered it in the light of a preparatory measure for some more efficient plan of taxation, or some new scheme with respect to the levy of the militia. These fears operated rather outside than inside the House, and tended in many instances to false or defective returns.

The Act under the authority of which the first enumeration was to be taken is the 41 Geo. III. c. 15, *An Act for taking an Account of the Population of Gt. Brit., and of the Increase or Diminution thereof*. The day named for the enumeration was the 10th March. Many preparations were required to be made. The rector, vicar, overseer, or other authorized person in each parish in England—and in Scotland the parochial schoolmaster—was to fill up in a schedule sent for the purpose answers to the following questions :

1st.—How many inhabited houses are there in your parish, township, or place ; by how many families are they occupied ; and how many houses therein are uninhabited ?

2nd.—How many persons (including children of whatever age) are there actually found within the limits of your parish, etc., at the time of taking this account, distinguishing males and females, exclusive of men actually serving in His Majesty's regular forces or militia, and exclusive of seamen either in His Majesty's or belonging to registered vessels.

3rd.—What number of persons in your parish, etc., are chiefly employed in agriculture ; how many in trade manufactures, or handicraft ; and how many are not comprised in any of the preceding classes ?

4th.—What was the number of baptisms and burials in your parish, etc., in the several years 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, and each subsequent year to the 31st day of December, 1800, distinguishing males from females ?

5th.—What was the number of marriages in your parish, etc., in each year, from the year 1754 inclusive to the end of the year 1800 ?

6th.—Are there any matters which you think it necessary to remark in explanation of your answers to any of the preceding questions ?

The information so obtained was valuable in the degree of its completeness. It will be spoken of under POPULATION, OCCUPATIONS, etc. The powers of the Act did not extend to *Ireland*.

In 1811 the second census of Gt. Brit. was taken ; the form of returns being much the same as in the first. The prejudices attending the first enumeration had almost entirely passed away.

In 1813 the first census was taken in *Ireland* ; but was regarded as a failure. (See 1821.)

At the 3rd census of Gt. Brit., 1821, a return of the "ages of the people" was first introduced. In 1821 also a very complete census was taken in Ireland. [IRELAND.]

In 1829 there was pub. a pamp., *Proposals for an Improved Census of the Pop.* Upon this there was founded an able art. in the *Edin. Review* [vol. 49]. The writer pointed out in a forcible manner that an actual enumeration, or census, of the people "is the only means that can be safely depended upon for ascertaining their numbers." He

reviewed many of the previous appliances, and showed how, and why, they had failed. He remarks :

Although the happiness of a country does not depend on the circumstance of the inhabitants being few or many, but on the proportion which they bear to the supply of necessities, conveniences, and enjoyments at their disposal, still it is on many accounts extremely desirable to know their exact number. A nation, having only 10 millions of people, might be decidedly more powerful than a nation with 20 millions, if they were less instructed, less industrious, or less rich. But other things being the same, there can be no doubt that the political power and importance of a nation will be in a very great degree dependent on the amount of its pop. Although, however, the magnitude of a nation had no influence in determining the place which it must occupy in the scale of nations, still there are many most interesting subjects of inquiry which cannot be successfully prosecuted till this magnitude be known. It is impossible, for example, to determine the extent to which levies of individuals, either for the military service, or for any other object, may be safely carried, unless the pop. has been enumerated and classed. It is clearly too for the interest of a very large class of persons, or rather, we should say, of the public, that those questions which depend on the expectation or prob. duration of human life, such as those relating to L. ins., the constitution of friendly sos., and the value of L. annu., should be accurately solved. But this cannot be done without the aid of T. truly representing the laws of mort.; and these cannot be prepared without the aid of censuses, enumerating not only the total number of persons in a country or district, but the numbers at every different age from infancy upwards. The solution of such questions is not, however, the only, nor, perhaps, the greatest service, that may be derived from enumerations of the pop. By comparing together censuses made with the requisite care, and embracing a sufficiency of details, we obtain authentic information, not otherwise attainable, with respect to the proportion which the sexes bear to each other; the changes in the channels of industry; the increase and decrease of different diseases; the effect of epidemics; and an immense variety of other subjects, which are not merely matters of rational and liberal curiosity, but come home to our business and bosoms, and exercise a powerful influence over human happiness.

He said—speaking of course only of the first three—“ There is good reason to think that no one of the censuses taken in this country is nearly so accurate as it might have been.” He expounds his reasons for this statement, and adds :

A census in which the occupation of every individual and his age were specified would be a most invaluable document; not only would it show the number of individuals belonging to each separate profession or calling, but it would serve to exhibit the influence which different employments exercise on the rate of mort.; while by comparing different censuses of this sort future inquirers would obtain an accurate knowledge of the changes produced by the progress of society, both as respects the numerical relations of the different classes to each other, and as respects their longevity. . . . Let not therefore the approaching opportunity of obtaining a correct census—a census worthy of the country and the age—be neglected. If the census to be taken in 1831 be executed with due care, both as respects the enumeration and the classification of the people, it will be one of the most important documents ever prepared under Parl. authority; and will not only afford a vast deal of information of immediate practical utility, but will be a point of comparison to all future times.

So far from these wise counsels prevailing, the census of 1831 retrograded a step; and a return of the “ ages,” which had been introduced in 1821, was on this occasion not asked for !

In 1830 a Parl. Committee sat and took evidence, in view of the census of 1831; but, as we have said, all efforts at improvement proved useless on that occasion.

In the census of 1841 the “ ages of the people ”—one of the most important points of value for scientific purposes—were again taken. A special committee of the then newly formed Statistical So. of Lond. had been appointed in the preceding year (1840), with a view of making suggestions for improving the machinery to be employed in the census, and of enlarging its scope. This Committee made a very able report [*Statis. Journ.* vol. iii., p. 72], from which we take the following passage :

The Committee conceive that a census to be made by Gov., extending, as in every country it has extended, beyond a mere counting of heads, contemplates various purposes besides the mere ascertainment of numerical strength. Some of these concern immediate administration . . . But a census is also generally extended to circumstances influencing the condition of the people, such as their industrial occupations; and to various facts illustrative of that condition, belonging to the field of vital statistics. It is in solicitude for the collection of the largest amount of these data, and for assuring to them a scientific correctness, that the Committee feel their appointment to the present labour to have originated.

This census was the first taken under the newly-formed organization of the Reg.-Gen.

In 1842 Mr. G. R. Porter read before the Statistical So. a paper : *An Examination of Some Facts obtained at the Recent Enumeration of the Inhabitants of Gt. Brit., so far as the same have been pub. by the Census Commissioners* [*Statis. Journ.*, vol. iv., p. 277, and vol. vi. p. 1].

In 1843 there was read before the Brit. Asso. at Cork, a paper, *Obs. on the Census of the Pop. of Ireland in 1841*, by Capt. Larcom, one of the Commissioners for taking the census [*Statis. Journ.*, vol. vi. p. 323]. The paper is one of considerable interest.

In 1848 the Rev. E. Wyatt-Edgell read before the Statistical So. a paper, *Remarks on the Plan adopted for taking the Census in 1841, with suggestions for its improvement*. One of his suggestions was that the census should be taken at Christmas instead of in June, as it had previously been taken.

In 1849 a census of the pop. of Bombay and Colaba was taken. A statement showing the relative numbers of young, adult, and aged persons, classed according to religious persuasions, is given in vol. i. of *Assu. Mag.*, p. 83. [BOMBAY.]

In 1850 another Committee of the Statistical So. was appointed, in view of the census of 1851. Among other recommendations of this Committee was one that the classification of houses be made similar to that of the Irish census of 1841, viz. by adding to the number of houses inhabited and uninhabited *the number of rooms in each*.

The 6th census of Gt. Britain, 1851, took a wider scope than any of its predecessors. It was made to consist of two parts : (1) *Compulsory*—comprising an enumeration of persons and houses ; and an account of the age, sex, relationship, civil or matrimonial condition, occupation, and birthplace of all the inhabitants ; (2) *Voluntary*—consisting of an elaborate inquiry as to the then existing provision for education and religious worship, and the extent to which that provision was made use of, viz. an enumeration of all the day schools and Sunday schools throughout the country, and of the scholars attending them.

The new features introduced into the compulsory portion of this census were the ascertainment of the various relationships, as husband, wife, son, daughter ; the civil condition, as married, unmarried, widower, or widow ; and the number of the blind and deaf and dumb—all very valuable details.

In 1853 Mr. Edward Cheshire pub., *Results of the Census of Gt. Brit. in 1851, with a Description of the Machinery and Process employed to obtain the Return*. He says :

The inquiries undertaken at the census of 1851 were of a far more extensive character than those pursued at any previous enumeration ; for it was resolved to exhibit not only the statistics of parishes, and of Parl. and Municipal boroughs, but also of such other large towns in England and Scotland as appeared sufficiently important for separate mention ; and the statistics of all the ecclesiastical districts and new ecclesiastical parishes, which during the last 40 years had been created in E. and W.

The local machinery by which the objects thus contemplated were to be attained differed considerably in England and Scotland. In England and Wales the *Regis. districts*, which for the most part are coterminous with the *unions* were made available for enumerating the pop. ; but in Scotland, which is, unfortunately, without any *Regis.* [a *Regis. Act* for Scotland was passed 1854], the census was taken through the agency of the sheriffs of counties, and the provosts, and other chief magistrates of Royal and Parl. burghs. The total number of enumeration districts thus apportioned in Gt. Brit. and its Isles was 38,740 ; to each of these a duly qualified enumerator was appointed.

It was necessary that these enumeration districts should be formed with a careful reference to the various divisions of the country, the pop. of which was to be separately distinguished in the returns. Accordingly, the instructions issued to Registrars in England, for the formation of these districts, directed that while the boundaries of parishes should be taken as the *basis* upon which to frame the various divisions, attention should be paid to other boundaries.

In the *Companion to the [Brit.] Almanack*, 1855, there is an interesting art. on the *Census of the United States*, 1850. [UNITED STATES.]

In 1855 Mr. Geo. Scott addressed to the *Assu. Mag.* [vol. vi., p. 47], a paper in the form of a letter, *On Certain Means furnished by the Census of 1851 for Extending the Application of the Principle of Assu. to the Social Condition*. The point of his paper was the providing annu. for unmarried females. His views took practical shape soon afterwards in the founding of the *Female Provident L. office*.

At the Social Science Congress held at Bradford, in 1859, a paper was read by Mr. Horace Mann, *What Information, as to the Social Condition of England and Wales, would it be most desirable to Collect at the Census of 1861*. The object of the paper appeared not so much to suggest as to invite suggestions. He said :

Perhaps no opportunity is ever presented so favourable to an extensive collection of facts upon many points of social importance as that which is afforded by the decennial census. The necessary existence, for the purpose of enumerating the pop., of an elaborate machinery covering every portion of the land, and penetrating to every individual tenement, suggests of itself the desirableness of making as much as possible of so costly and complete an apparatus during the short period of its operation.

He then reviewed the range of the then more recent Census inquiries, especially of the last.

On the same occasion Mr. J. T. Hammick read a paper, *On the Direction in which the Census Inquiry may be Extended in 1861*. He suggested several points for further development, especially as regarded sickness and infirmity. Mr. Nicholas Waterhouse also read a paper, *Suggestions for the Next Census*.

Mr. A. G. Finlaison, in his Report on *Tontines and L. Annu.*, 1860, calls attention to the fact, that the purposes for which a census is generally taken have remained much the same from the days when Moses numbered the Children of Israel.

The Commissioners appointed to take the Census of 1861 were the Reg.-Gen. (Major Graham), Dr. Farr, and Mr. Hammick. In June of the same year they pub. a preliminary report, in which the following details were given :

The Act for taking the Census of England required that the 31,000 *Enumerators* employed should copy into as many books, the householders' schedules and other particulars collected by them in their several districts. These books were to be placed, with the schedules, in the hands of the 2197 *Registrars*, who were to subject them to a strict examination, and make all necessary corrections. This being accomplished, the books and other documents were to be trans. before the 30th April [the Census was taken 8th April] to the custody of 631 *Superintendent-Registrars*, who were required to test the accuracy of their contents by a further process of revision.

The Census in *Ireland* embraced inquiries regarding the religious denomination, and the answers obtained were regarded as most satisfactory. The Census in *Scotland* embraced some important details regarding "house accommodation."

At the meeting of the *British Asso.* held at Manchester in the autumn of 1861, Mr. Hammick presented a paper, *On the General Results of the Census of the U.K., 1861*, in which many most interesting details were furnished.

In the *Assu. Mag.*, vol. x., p. 1, is given an abstract of the results of the Census of 1861.

In 1862 there appeared from the pen of M. Maurice Block an interesting account of

the Census in France in 1861. The substance of these papers will be found in the *Statistical Journ.*, vol. xxv., p. 72.

In 1865 Mr. W. L. Sargant read before the Statistical So. a paper, *Inconsistencies of the Census of 1861, with the Reg.-Gen. Reports; and the Deficiencies in the Local Registry of Births*. The principal conclusions at which he arrived are the following :

1. That the census of 1861 is not to be implicitly trusted, but requires further investigation.
- a. That male infants below 1 year old are underrated by 36,546 or 12 p.c.; and the female infants by 30,831 or 10½ p.c.; that in the 2nd year of life the deficiencies are 11½ and 11 p.c.; in the 3rd year, 2 and 1 p.c.; and in the first 5 years taken together, 6½ and 6 p.c.
3. That this difference of error between male and female infants is prob. owing to the better regis. of male births, and not to a worse enumeration of males in the census.
4. That the males and females together, of all ages *under* 20, are apparently underrated by 510,440; but that some considerable deductions have to be made from this number.
5. That the males and females together, of *all* ages, are prob. underrated by more than half a million.
6. That the deficiency in the census is far greater in some districts than in others.
7. That the regis. of births is very imperfect in places; *Liverpool* and *Hull* appearing to be the worst, with *Lond.*, *Cheltenham*, *Plymouth*, and *Portsmouth* following in order of demerit.
8. That we have but few materials for comparing the Census of Scotland with calculations made from the regis. of births; but that, as far as we can judge, the Scottish census is as inaccurate as the English one.

In giving these "conclusions," it must not be understood that we indorse them. Our purpose is to supply the substance of, or give reference to, all information upon the subject of which we are treating.

In the same year Dr. Farr read before the same So. a paper, *On Infant Mort., and on Alleged Inaccuracies of the Census*, in which he reviewed and answered the preceding paper. The two productions throw a flood of light over the question of the mort. of infants. [INFANT MORTALITY.]

In view of the 8th Census, then approaching, several of the learned sos. took action in 1870. The Council of the *Statistical* So. urged the repetition of the religious and educational census—this time to be made compulsory, especially as to answering the question whether every child or person beyond the age of 7 could read or write. It also urged inquiries as to house accommodation in accordance with the preceding Census of Scotland. The *National Asso. for the Promotion of Social Science* appointed a Special Committee, consisting of Mr. George Godwin, Dr. Stewart, Mr. Lewis, Mr. Walford, Mr. Safford, Mr. Powell, and Mr. Aldis. That Committee, after several sittings, passed the following series of recommendations :

1. That the Census of 1871 should be taken as nearly as possible at the same date as on the former occasions of 1851 and 1861.

2. That this Committee very strongly urges upon the Government the desirability of adopting a uniform system in taking the Census of 1871 for each of the three divisions of the U.K.; this uniformity not having been observed hitherto.

3. That alike for England and Wales, Scotland and Ireland, the Census "Householder's Schedule" should embrace the following particulars: 1. Name. 2. Sex. 3. Condition (civil). 4. Age (last birthday). 5. Degree of instruction, *a*, can read; *b*, can write. 6. Rank, profession, or occupation. 7. Relation to head of family. 8. Where born. 9. Language usually spoken. 10. Professed religion. 11. If deaf, dumb, blind, insane, sick, or infirm; if sick, the nature of the malady to be stated.—[Vide p. 129, Irish Census Report, 1861, Part III., vol. i.]

4. That it would be of the greatest utility if the Government would direct the Census Commissioners for the U.K. in 1871 to undertake, as a subsidiary inquiry, an industrial census, the principles of which were discussed in the last English Census Reports [vol. iii., p. 233]. Such inquiry would include: House accommodation, church and chapel accommodation, school accommodation, manufactures, trades, professions, wages of working classes.

5. That an *annual enumeration* of merely the number and ages of the pop. is greatly needed, at least for all the principal cities and towns of the kingdom.

The Brit. Asso. at its meeting in Edinburgh appointed a Special Committee consisting of Prof. Jevons, Mr. Dudley Baxter, Mr. Dawson, Mr. Heywood, Dr. Hodgson, and Prof. Waley. Their memorial to the Home Sec. embodied the following :

Your memorialists could specify a great many points in which there was divergence between the Tables of 1861; but they will mention only a few of the more important cases :

1. The detailed pop. T. of Eng., Scot., and Ireland, differ as regards the periods of age specified. The Scotch report gives 21 intervals of age, the Irish report generally 22, and the English only 13. Either one-third of the printed matter in the Scotch and Irish T. is superfluous, or that in the English T. deficient.

2. The classification of occupations is apparently identical in the 3 reports, but there is much real discrepancy between the Irish and English reports, rendering exact comparison difficult.

3. In the Irish report there is no comparison and classification of occupation according to age: classification according to religions being substituted, although such a classification could not be made in England or Scotland.

4. In the appendix to the English report appears a T. (No. 56), giving most important information as regards the number of the pop. at each year of age. Inconvenience has been felt from the want of similar information concerning the pop. of Scotland and Ireland.

5. In the appendix to the Irish report they find some interesting T. (II., III., and IV.), to which there is nothing exactly corresponding in the other reports, so far as they have been able to discover.

6. The T., even when containing the same information, are often stated in different forms and arrangements, seriously increasing the labour of research.

The General Assembly of the Free Church of Scotland also memorialized in favour of a religious and educational census, but it was all of no avail. The Ministry of the day did not understand the cry of "let there be light"! Three separate enactments were passed, as before, for the three divisions of the Kingdom, differing indeed in minor points, but all agreeing in excluding any provisions on the new and important points suggested.

The Census was taken on Monday, 3rd April, 1871. The instructions given to enu-

merators were exceedingly minute; for example, the qualification for a place in the Census was to be alive *at midnight* on the 2nd of April. The enumerators were expressly enjoined not to include any one who might die *before* midnight, nor any infant born *after* midnight. If we look at the facts, there were prob. 3000 births and 1863 deaths during the census day of 24 hours, or 4863 in all. If half of these births and deaths occurred in the night, and were improperly included in the returns, the pop. at any given moment would be overstated to the extent of 2432. This is one of the reasons why exactitude becomes essential.

The cost of this last Census was estimated as follows: E. and W. £120,000; Scotland £30,000; Ireland £32,000. This was larger in each case than on any preceding occasion, the remuneration of the enumerators being fixed at a higher scale. The cost of the Census in E. and W. in 1841 was £86,728; 1851, £93,132; 1861, £95,719 (exclusive of postages). This was in 1841, £5 9s. per 1000 of the pop.; in 1851, £5 4s.; in 1861, £4 15s. 5d., or rather more than *one penny* per head for every man, woman, and child. The Census in Ireland was taken by the Irish constabulary and the Dublin police.

In June, 1871, preliminary reports upon the Census of England, Scotland, and Ireland, were presented to Parl. These, as usual, embodied many points of immediate interest. The more detailed Reports are still in course of preparation.

In 1872 there were pub. the following documents relating to the 9th Census of the U.S. [1870]: (1). *Statis. of Pop.*, consisting of a most elaborate series of returns in T. I. to VIII. inclusive. (2). *Statis. of the Blind, Deaf and Dumb, Insane and Idiotic* (by States and Territories). (3). *Statis. of Wealth, Taxation, and Public Indebtedness*. (4). *General Statis. of Agriculture* (by States and Territories). We have to thank the President of the U.S., and also the Hon. Francis A. Walker, Supt. of the Census, for their thoughtful interest in sending us early copies of these important publications.

At the present time nearly every European country except Turkey has a Census of its pop. taken with more or less regularity. The value of the information so brought together cannot be overestimated. Much of it is presented in various forms through these pages. Many interesting articles thereon will be found in the pages of the *Statis. Journ.*, beyond those already quoted. The various reports of the Census Commissioners, however, are the great storehouses of such facts, and these will be referred to in some detail in our art. on POPULATION.

CENTENARIAN.—A person who has reached a 100 years of age. There has been, and still is, a good deal of controversy regarding centenarianism. A great many of our best-informed writers regard 100 years as the natural limit of the life of man, and to that age they assert a certain per-centage of all mankind attain. There is another class who assert that such a theory is preposterous, and contrary to Scripture authority. Taking advantage of the difficulties surrounding the proof of birth prior to a complete system of regis. being introduced, they discard every alleged Centenarian where the proof is incomplete. We do not intend to pursue the subject here: it will be treated fully under LONGEVITY, where it will be shown that there are numerous well-authenticated instances of centenarianism.

In 1872 Sir George Duncan Gibb, Bart., read before the Anthropological Institute a paper, *The Physical Condition of Centenarians, as derived from Personal Observation in Nine Genuine Examples*. [LONGEVITY.]

In 1872 also there was a case reported from Rochester, Illinois, U.S., of a man who had reached 103 committing suicide.

CENTENARIAN LONGEVITY.—By this term is implied the period of life beyond 100 years enjoyed by centenarians. Mr. Babbage drew attention to this subject in 1826, and compiled a T. of mort. applicable to such cases, without, however, having the opportunity of testing the credibility of the cases reported. His T. will be given in a following art. Mr. Milne offers some obs. thereon. [CARLISLE T. OF MORT.] [LONGEVITY.]

CENTENARIAN TABLE OF MORTALITY.—Mr. Babbage, in his *Comparative View*, pub. 1826, included a T. which he had deduced from the lives of alleged centenarians. The T., he said, was formed from a collection of 1751 persons, who had reached the age of 100 and upwards. The greater part were selected from *Easton's* work, 1799; but some few of the names in that vol. were rejected as occurring twice, or as being of doubtful authority. Some additions were made by Mr. Babbage from other sources. They had all died before the commencement of the present century.

Mr. Babbage says, in reference to the data on which the T. is constructed:

About the ages marked by round numbers, as 110, 120, and 130, there appeared to be more deaths than the proper allowance: but the most singular, and which deserves notice, from its not being explicable on the same principle, was the large number which occurred at the age of 102, both amongst females and males, but particularly amongst the latter. Traces of this will be found in the diminished decrement of lives at 101, and the large increase at 102, but in the original list the disproportion was much greater.

In order to form the present T. 150 was assumed as the extent of human life, *although there were two or three authentic instances of persons of greater age*. Commencing with this period, wherever too large a number of deaths were found in any one year, they were equalized by transferring some of them to such of the preceding years as appeared to be deficient; thus it was imagined that the tendency to overrate the age of old people would be in some measure compensated.

TABLE OF 1751 PERSONS REACHING THE AGE OF 100 AND UPWARDS :

Age.	Die in the next year.	Number Alive.	Age.	Die in the next year.	Number Alive.	Age.	Die in the next year.	Number Alive.
100	164	1751	117	24	209	134	3	28
101	145	1587	118	22	185	135	3	25
102	162	1442	119	20	163	136	3	22
103	154	1280	120	17	143	137	3	19
104	150	1126	121	14	126	138	2	16
105	140	976	122	13	112	139	2	14
106	120	836	123	11	99	140	2	12
107	94	716	124	9	88	141	1	10
108	80	622	125	8	79	142	1	9
109	69	542	126	8	71	143	1	8
110	57	473	127	7	63	144	1	7
111	48	416	128	6	56	145	1	6
112	40	368	129	6	50	146	1	5
113	34	328	130	5	44	147	1	4
114	31	294	131	4	39	148	1	3
115	29	263	132	4	35	149	1	2
116	25	234	133	3	31	150	1	1

[In modern mort. T. the positions of the 2nd and 3rd cols. of this T. would be reversed. We give it as its compiler arranged it.]

CENTRAL LOAN, LIFE, AND REVERSION.—A co. under this title was projected in 1849; but prov. regis. was the limit of its attainment.

CEOLA.—A large ship.—*Blount.*

CEPHALITIS.—Inflammation of the brain (Class, LOCAL; Order, Disease of *Nervous System*).—The deaths from this cause in England present very slight variations. In ten consecutive years they were as follows: 1858, 3463; 1859, 3451; 1860, 3518; 1861, 3426; 1862, 3580; 1863, 3869; 1864, 4014; 1865, 4199; 1866, 4146; 1867, 4220. The average over a period of 15 years ending 1864 was 187 to each million of the pop. living.

The deaths in 1867 were: Males, 2337; Females, 1883. Of the males, 1213 died under the age of 5, and the remainder mostly in the younger ages—the decrease being steady as the ages advance. Of the females, 928 died under 5, and then the same as the males. See BRAIN DISEASE.

CEREBELLUM.—The little brain, situate behind the larger brain or *cerebrum*.

CEREBRUM.—This term denotes the vessel which hold the brains, *i.e.* the skull: hence the brains. The term is restricted to the chief portion of the brain, occupying the whole upper cavity of the skull.

CERTIFICATE.—A testimony given in writing to declare or verify the truth of anything; or of having discharged a duty, or complied with any specific requirements of the law.

CERTIFICATE OF AGE.—This must be a transcript of some recognized official record of age, duly verified. If it be taken from any other than an official record, it will be termed a DECLARATION OF AGE.

CERTIFICATE OF BAPTISM.—A copy of the registry of baptism taken from the parish regis., or any other record authorized by law to be kept for such purpose, duly verified. It is by no means synonymous with “certificate of birth,” inasmuch as baptism is usually more or less delayed after birth, sometimes for years; and with certain religious sects is altogether disregarded.

CERTIFICATE OF BIRTH.—This is an official copy of the actual entry in any duly authorized register of births, properly certified by the official lawfully in charge of the same.

CERTIFICATE OF BONUS.—On a declaration of bonus, a certificate is usually issued to each policy-holder, stating the amount of bonus, either cash or reversionary, and indicating how it has been or may be applied. [BONUS.]

CERTIFICATE OF BURIAL.—A certified copy of any entry of burial in a parish regis., or regis. of burials in any authorized public purial-place.

CERTIFICATE OF THE CAUSE OF DEATH.—No funeral can take place in Gt. Brit. until a copy of the entry in the register of deaths, signed by the registrar, or a certificate by a coroner, setting forth the cause of death, is produced to the minister performing the burial service, except in certain cases provided for by the General Registration Act, and in which the officiating minister has to give notice to the registrar. [FRIENDLY SOS., 1858.]

CERTIFICATE OF DEATH.—An official copy of the entry in any register of deaths existing and kept pursuant to law.

CERTIFICATE OF HEALTH.—A certificate issued to a person seeking admission as a member of friendly sos. and other provident asso.

CERTIFICATE OF INCORPORATION.—The Cos. Act, 1862 (25 & 26 Vict. c. 89), provides (sec. 18), that upon regis. of the memorandum of asso., and of the art. of asso. (where required or desired), the registrar shall certify under his hand that the company is

incorporated, and in the case of a limited company, that the co. is limited, and such certificate shall be conclusive evidence that all the requisitions of the Act in respect of regis. have been complied with.

CERTIFICATE OF LOSS (*Marine*).—It appears to have been the practice for the Clerk of the *Chamber of Insurances* to grant a Certificate of Loss after a proper investigation had been made into the circumstances of the loss, and the Chamber had become satisfied thereon. We have not met with one of these forms. [CHAMBERS OF INS.]

(*Fire*).—According to the early practice of F. ins. offices, a certificate had to be furnished by all claimants in respect of F. losses (in add. to their own affidavit or declaration), by the minister and churchwardens, and some other respectable inhabitants of the parish, not concerned in such loss, importing that they were well acquainted with the character and circumstances of the person or persons insured; and did know, or verily believe, that he, she, or they, really and by misfortune, without any fraud or evil practice, had sustained by such fire the loss and damage as his, her, or their loss, to the value therein mentioned. Here is a condition of this effect, as issued by the *Sun* F. office, under date 1st Nov., 1794:

Art. XI.—Persons ins. sustaining any loss or damage by fire are forthwith to give notice thereof at the office, and as soon as possible afterwards deliver in as particular an account of their loss or damage as the nature of the case will admit of . . . ; and procure a certificate under the hands of the minister and churchwardens, together with some other respectable inhabitants of the parish not concerned in such loss, importing that they are well acquainted with the character and circumstances of the person or persons ins., and do know or verily believe that he, she, or they, really and by misfortune, without any fraud or evil practice, have sustained by such fire the loss and damage as his, her, or their loss, to the value therein mentioned, etc., etc.

The *Hand-in-Hand*, *Union*, *Lond. Assu.*, *Royal Exchange*, and indeed all the early F. offices, required similar certificates.

CERTIFICATE OF MARRIAGE.—A certified copy of the entry of marriage in any parish regis., or in any of the regis. of marriage provided under the Marriage Laws. [MARRIAGES, REGIS. OF.]

CERTIFICATE OF REGISTRATION.—The Joint-Stock Cos. Regis. Act (1844), 7 & 8 Vict. c. 110, provided for the issuing of certificates of PROVISIONAL REGIS., and of COMPLETE REGIS. These will be spoken of under those heads. The Cos. Act, 1862, 25 & 26 Vict. c. 89, provides (sec. 191), that cos. not orig. constituted under that Act may be regis. under it; and the certificate of incorp. given by the registrar of joint-stock cos. to any such co. shall be conclusive evidence that all the requisitions under that Act have been complied with; and the date of incorp. in such certificate shall be deemed to be the date at which the co. is incorp. under this Act.

CERTIFICATE OF SHARE.—The Cos. Act, 1862, declares (sec. 31), that a certificate under the common seal of the co. specifying any share or shares or stock held by any member of a co. shall be *prima facie* evidence of the title of the member to the share or shares or stock therein specified.

The Cos. Act, 1867, provides for the issuing of fully paid-up shares to bearer by means of share-warrants. [SHARES TO BEARER.] [SHARE-WARRANTS.]

CESSPOOLS.—It can easily be shown that the mort. bears a certain proportion to the quantity of the poison which the people inhale; and that the quantity is greatest under the cesspool system, which formerly prevailed in Lond., and is now in use in the French, German, and Italian towns. The mort. has gradually fallen in Lond. as the cesspools have been abolished; it is still high in foreign cities where the cesspools are in use. In Manchester, where the dirt is allowed to decay behind the houses, and is not thrown into sewers, the mort. was at the rate of 33 per 1000 in the years 1841–50; and in the foreign cesspooled cities the mort. ranges from 30 to 44 in the 1000.—*Reg.-Gen.*, 21st R., 1860.

Dr. T. Herbert Barker performed, about 1858, an ingenious series of experiments on animals to determine the effects of each of the noxious principles which arise from cesspools. He placed the animals in a close chamber by a cesspool, with which a tube opening into the chamber communicated, and a lamp was arranged so as to draw a current of cesspool air steadily over the creatures inside. With a pair of bellows Dr. Barker could draw the air from the chamber. A young dog in half an hour became very uneasy and restless; he vomited and had a distinct rigor, and in the course of a day was exhausted. When he was removed, he soon recovered. Another dog was subjected to the cesspool air during twelve days; in the first seven he underwent a series of sufferings not unlike the symptoms of the diseases of children in hot weather; on the ninth he was very ill and miserable. After he was liberated on the 12th day, he remained very thin and weak for six weeks. Dr. Barker then continued his experiments on the effects of definite doses of the gases in the sewers, and killed or poisoned several sparrows, linnets, jackdaws, and dogs.

In the 24th R. of *Reg.-Gen.* (1863), Dr. Farr took up the question, and observed:

The practice of keeping the refuse of the sick and the healthy of successive generations in the cesspools alike of cottages and palaces every day grows more pernicious as the pop. becomes denser; for the water is defiled in wells, and even when the cesspools and drains are emptied into the Thames and other rivers, it is pumped again into the houses only partially purified. The ova of worms and the seeds of various diseases are thus diffused among children; while great numbers of men and women in the prime of life also suffer, and often die of the maladies which are the inevitable consequences of violations of natural laws.

Happily the cesspool system, and all its attendant evils, is being gradually driven from the towns of Gt. Brit.

CESTUI QUE TRUST.—The person who possesses the equitable right to deal with property, and receive the rents, issues, and profits thereof.

CESTUI QUE VIE.—The person for whose life any lands, tenements, or hereditaments may be held.

CHADWICK, DAVID, M.P., was for some years District Agent in Manchester for the *Globe* Ins. Co., and afterwards for the *Liverpool, London and Globe*, and secured a large and important bus. for these offices.

CHADWICK, EDWIN, C.B., Barrister-at-Law and Social Economist.—He has during the whole of the present generation been an earnest worker in the cause of the public health. Mr. Chadwick was born in 1801. His publications have been numerous, although mostly in the shape of official reports. We propose to notice all such as relate to our subject.

In 1828 he contributed a paper to the *Westminster Review*, on L. Assu. [LIFE INS., HIST. OF.]

In 1838, being then connected with the Poor Law Board, Mr. Chadwick obtained the consent of the Commissioners to a special inquiry into the local and preventible causes of disease, and the improvement of habitations in the metropolis. As the result of this investigation, he presented a Report, proposing a venous and arterial system of water supply and drainage for the improvement of towns, and works for the application of sewage to agricultural production.

A little later a similar inquiry was extended to the whole of England and Wales, and was taken charge of by Mr. Chadwick, although he had then become Sec. of the Poor Law Board. The result of this larger inquiry appeared in the shape of Reports from time to time under various titles.

In 1843 he presented a Report *On the Results of a Special Inquiry into the Practice of Interments in Towns*; which document laid the foundation of subsequent legis. upon that subject. In the same year he read before the Statistical So. of Lond. a paper: *On the best mode of representing by returns the Duration of Life and Causes of Mort.* [See vol. vii. of *Statist. Journ.*]

In 1848 he was appointed a Commissioner of the General Board of Health, for improving the supplies of water, and the sewage, drainage, cleansing, and paving of towns.

In 1858 Mr. Chadwick read before the Social Science Congress at Liverpool a paper: *On the Application of Sanitary Science to the Protection of the Indian Army*, in which the subject was treated in a very complete and conclusive manner.

In 1860 he delivered before the Public Health Department of the Social Science Congress at Glasgow an address as Vice-President, which address abounds with facts of a most important character, drawn for the most part from undoubted sources.

In 1861 Mr. Chadwick delivered an address before the Brit. Asso. at Cambridge, as President of the Section of Economic Science and Statistics, in which he treated of many subjects associated with health and statistics.

CHAIRMAN.—Every ins. asso. is supposed to have a Chairman. In some cases the Chairman is fixed by the deed or art. of asso.; in others he is elected by the ann. meeting. More generally the chairman of the co. is the chairman of the board of directors, and is elected by the directors annually or otherwise. The L. Assu. Cos. Act of 1870 gives the following definition:—"The term 'Chairman' means the person for the time being presiding over the court or board of directors of the co." Sec. 10 provides that "every statement or abstract hereinbefore required to be made shall be signed by the 'Chairman,' etc. [ACCOUNTS.]

CHALK STONES.—Gouty concretions, resembling half-dried mortar, formed under the skin, about the joints, chiefly of the fingers and toes, and consisting of urate of soda.

CHALKING [or CAULKING].—Stopping the seams in a ship or a vessel.

CHALMERS, GEORGE, pub. in Lond., in 1782, *An Estimate of the Comparative Strength of Gt. Brit., and of the Losses of her Trade from every War since the Revolution*. There was appended to the ed. of this work, pub. 1802, and generally called *Chalmers' Estimate*, the "Political Conclusions of Gregory King," which we shall speak of hereafter. The last ed. was pub. in Edin. in 1812. This work exhibits the constant progress made by the country in wealth and pop. from the Revolution down to 1812, and shows that complaints of the decline of trade, the impoverished condition of the people, and the oppressiveness of taxation, have been constantly occurring, and have been usually put forward with the greatest confidence when there was least foundation for them.—*McCulloch*. We have had occasion to quote this book in various parts of the present work.

CHALMERS, WILLIAM, was General Man. of *North of Scotland* (now *Northern*) Ins. Co. from its formation in 1836 down to 1865, when he retired upon a full pension. He died Oct., 1872, aged 71.

CHALYBEATE WATERS (*Ferruginous Waters*).—Mineral waters, whose active principle is iron. There are two kinds: the *carbonated*, containing carbonate of the protoxide of iron; and the *sulphated*, containing sulphate of iron. There are variations containing other properties. Invalids are sent to the various Spas to obtain the curative properties of these waters.

CHAMBER OF COMMERCE.—An assembly of merchants and traders where affairs relating to trade are treated of.

There has been a good deal of speculation regarding the origin of Chambers of Commerce. King Edward II. is said to have summoned a chamber of merchants to meet him at Lincoln in 1315 ; but the purport of this assembly, and whether it was the first of its kind, does not appear. Macpherson, in his *Annals of Commerce*, gives the following account of their origin, under date 1318 :

The King being desirous of consulting with judicious and prudent merchants concerning the establishment of the staple of wool in Flanders and other commercial matters, John of Cherleton, citizen of Lond. and mayor of the merchants of England, who was furnished by the King's council with a particular statement of the matters to be considered, together with two merchants chosen out of every city and burgh throughout the kingdom, were summoned to meet at Lond. in the Octaves of St. Hilary, in order to deliberate upon those matters (*Fœdera*, vol. iii. p. 740). This is, properly speaking, the earliest council of trade known in English history or record, as the merchants appear to have formed a board of themselves ; whereas those summoned to *Lincoln* in the year 1315 seem to have been called only to give information and perhaps advice to the King's council or parliament.

We had expected that the early hist. of Chambers of Commerce would throw some light upon the hist. of marine and other branches of ins. In this we have been disappointed ; and it is prob. that in earlier times the general prevalence of *Chambers of Ins.* prevented the Chambers of Commerce from attempting to regulate matters of ins. as they have sometimes attempted to do in modern times. [CHAMBERS OF INS.] [TRIBUNALS OF COMMERCE.]

CHAMBERLAYNE, EDWARD, pub. in 1668, *Angliæ Notitia ; or, the Present State of England, with Divers Remarks upon the Ancient State thereof*. This work passed through a large number of eds. The first 20 were ed. by the author himself ; and about the same number by his son. It treated of pop., and such kindred subjects as are included in the range of political arithmetic. McCulloch speaks on the whole favourably of it. We have had occasion to quote it in these pages.

CHAMBERS' EDINBURGH JOURNAL.—Various articles bearing upon ins. have appeared in this pub. The following paper, pub. 1841, attracted considerable attention : *Cautions respecting L. Assu. and Annu.* (No. 474).

CHAMBERS OF INSURANCE.—At a very early period *Chambers of Ins.* were estab. in various cities of Europe. Their objects appear to have been two-fold : (1) to promote the practice of marine ins. on a solid and uniform basis ; and (2) to settle all disputes arising among merchants and others concerning matters of ins.

The earliest of these Chambers, of which we have any present indication, appear to have been founded in the Mediterranean ports about the 12th century. The chief of these was prob. in Venice, which appears for several centuries to have been the chosen seat of marine ins.

We have already seen that a Chamber of Ins. is stated to have been estab. at *Bruges* in 1310. [BRUGES.]

It seems more than probable that a Chamber of Ins. existed in *Barcelona* in the 13th or 14th century. [BARCELONA.]

A Chamber of Ins. was estab. in *Amsterdam* in 1598, called the "Kamer von Assurantie."

In 1600 a Chamber of Ins. was estab. at "the city of *Middleburg* in *Zealand*" (Holland). The Ins. Ordin. promulgated in that city in Sept. of that year provides :

XXIX. The officers, commissioners of the Chamber of Assu., their sec., his sworn clerk, the officers of the customs or brokers of assu., shall not make nor cause any assu. to be made, either directly or indirectly [as on their own account, or as underwriters].

XXXIII. All differences arising between any parties concerning affairs of assu. made in this place shall in the first instance be inquired into and be determined according to this Ordin. by commissioners of the Chamber of Assu., who are to the number of three appointed for that purpose.

A Chamber of Maritime Affairs was estab. in *Rotterdam*, prob. at an early date. The Ins. Ordin. of 1721 says (Art. 1) : "All disputes arising in this city, relating to assu., averages, or other affairs of navigation, shall in the first instance be determined by the Chamber for the Maritime Law estab. in this city."

Other continental cities had or have Chambers of Ins. under various designations, as "Courts of Ins." "Offices of Ins." etc., etc. These are mostly spoken of under the Ins. Ordin., or Hist. of Ins. in those places. It is not unlikely that some, if not many, of the various Ins. Ordin., of which such frequent mention is made in these pages, owe their origin in the fact of the existence of these early Chambers of Ins.

The *Consolato del Mare* was prob. used, if not in part compiled, by the early Chambers of Ins. ; while in some cases prob. the *Consular Courts* assumed the functions of the Chambers of Ins. [CONSOLATO DEL MARE.] [CONSULAR COURTS.]

It seems not improbable that some of these Chambers of Ins. became transformed into corporate bodies, and instead of remaining confined to their original functions of registering and regulating ins. made by others, actually undertook the bus. of ins. themselves. The Ins. Co. of *Copenhagen*, which received a Royal Charter in 1746, seems to be a case in point. The Ins. Co. of *Stockholm*, chartered in 1750, we regard as another. The practice prob. became more general : for in the French *Dict. du Citoyen*, we find the following :

The credit of these [Foreign] Chambers or Cos. of Ins. depends chiefly upon the ability of the

directors and of the proper employment of the sums deposited with them. These funds are often made use of in loans on *bottomry* and in discounting of public and commercial paper. Chambers of Assu. may therefore be very useful to the State; they accelerate the circulation of specie, favour paper credit, and become a resource for merchants who have immediate need of ready money. Another advantage which these Chambers procure to the nation is that, by means of their competition, and the low prems. thereby established, commercial enterprises become less expensive, and merchants of our own nation are enabled to rival strangers.

The estab. in Lond. at an early date of a Chamber of Ins. appears to have been almost entirely overlooked by previous writers upon the subject; yet it has such an important bearing upon the hist. of Ins., *in its various branches*, that we propose to follow the events in some detail.

In 1574, "Sir James Hawes being maior," one Richard Candler, Mercer, obtained from the Queen (Elizabeth) a grant to make and regis. *all manner of assu.*, policies, intimations, renunciations, and other things whatever that thereafter should be made upon any ship or ships, goods or merchandize, *or any other thing or things, in the Royal Exchange, in Lond., or in any other place within the City, by any manner of persons of what nation, condition, or quality soever*; to endure the Queen's Majesty's pleasure; but with a proviso, that if the said office should be thought needful to be reformed for the better benefit of the subject that should have any dealing herein, then, notwithstanding the same, upon suit made to Her Highness, or her Honble. Council, by order to be directed in writing, the said Candler should conform himself thereunto.

We observe that it is mentioned by Stow that this patent was complained of by the notaries public and the brokers, that it was an intrusion upon them, and would be their utter undoing; and upon this, he says the patent seems to have been revoked. But in this respect he is clearly in error. We proceed to show what really did occur.

The first step taken after this grant appears to have been the appointment, under the order of the Lord Mayor, ratified by Her Majesty's Council, of commissioners for the hearing and ending of all matters of ins. The next step—the commissioners so appointed drew up a scale or bill of fees to be charged in the said office or Chamber of Ins. for registering pol., etc. This scale was submitted to the said Richard Candler for his approval or otherwise; and here is the document in which he expressed his views thereon:

The answer of Richard Candeler unto a bill of ffees sett downe by certen Aldermen & Cittezens of London apoynted by Sir Ambrose Nicholas Knight Lord Maior of London towching his office for the Making and Regestring of Assewraunces &c. in the names of the Comissioners apoynted for the rating of the Regestringe of Assewraunces by here Majesty's Letters pattentes under the great scale of England:

An unreasonable difference between v.s. per cente and xij d. p. cente.

Deceitfull shewes.

Comissioners ought not to exceed ther comission.

An evill bargayne to exchange something for nothing or thinges certen for uncerteyne thinges.

So longe as every man maye make his owen polley the decept in Assewraunces will nevyr be redressed, whiche is the greatest cause of the erection of the said offices, as apereth by the letters Pattentes.

First, where they wolde allow him for the entring and regestring of every polley of assewraunce xij d. and for everry c li. [100 livre] subscribid in everry souch polley being c li. and upwarde xij d. And if the assewraunce be lesse then c li. then he to have for the Regestring of the polley & souch assewraunce ij s. To this he answereth that althoughe ther is v.s. uppon the hondreth allowid [at] Andwarpe [Antwerp] for licke Regestringe approvid by Certificat yet neverthesse yf all the said Comissioners do agree uppon the said Ratte either more or lesse the said R. Candeler must and will hold him selfe contented therwith being orderly done according to her Majesty's said Comission.

Item, wher the saide parties in the names of the said Comissioners wolde further allowe to the said Richard Candeler for certificattes v.s. ffor Coppies of Pollecyes if enny be required ij s. vj d. for Searches vj d. To this he answereth that the said Comissioners have nonne awthoritie nor warraunt to rate anny soche thinges neither are they of enny valew tp be accomptid off. But thrust in to make some shew of lyving and therby slyly to convey from the said Richard Candeler the greatest partte of his office, (that is to saye) the making of all pollicies and Intimations to him grauntid in the said letters pattentes by speciall wordes. As the same doth well apeare as well by the Covenantes that they wold bynd the said R. Candeler to. As also by ther bill of rattes, wherin they saye that the said R. C. shall have xij d. for the making of every polley that shalbe brought to him to be maide. And that it shalbe lawfull to the said R. C. to make Intimations as other notoris maye (and noe otherwise).

Further he saith, That yf every man maye make pollicies that will, the case wilbe souche that the saide Richard Candeler shall not have the Regestringe of the Tenthe polley of assewraunce that shalbe made, ffor that he shall not knowe on whom to complayne for not Regestring ther assewraunces. And so his said office not abill [able] to cowntervaille his charges.

This document, the orig. of which is still preserved with the State Papers, is indorsed, "Answer to the bill of rattes delivered by my L. Maior to Mr. Secreterie Walsingham the 23 Maye 1576."

The marginal notes are not the least interesting portion of this document. They bring out its meaning even more vividly than the text itself.

In 1590 one John Allington moved that an office might be set up for the making and registering all manner of writings in the ordinary contracts and bargains usually made between all merchants, owners, and masters of ships before the going out of every ship or vessel; and that he, his deputies or assigns, might be the only registrars for that office. Strype (the able editor of Stow) considers this as another attempt to secure the grant formerly held by Candler. We regard this simply as an attempt to estab. a general marine regis., and not as in any way relating to the Chamber of Ins.

In 1601 was enacted the Stat. 43 Eliz. c. 12, under which was estab. the *Policies of Ins. Court*, appointing special commissioners to hear and determine disputes under pol. of ins. The preamble of this Act set forth that the said commissioners "shall meet weekly at the office of ins. on the west side of the Royal Exchange, for the execution of their commissions, without fee or reward,"—thus proving the continued existence of the Chamber of Ins., and adding another link to its usefulness. [POLICIES OF INS. COURT.]

In the year following that of the *Great Fire of Lond.* an Act was passed containing provisions for the rebuilding of the City, and in that Act it was provided, that all moneys which ought to be paid to the late *Assu. Office* in the late Royal Exchange, might be made "to the present Assu. Office in Gresham House."

Molloy [*De Jure Maritimo*] writes in 1682 :

Assurances are either publick or private. *Publick* when they are made and entered in a certain office or court, commonly called the *Office of Assu.*, on the Royal Exchange in Lond.; and the same are called publick, for that it is free for any man to resort and see what another hath assu. upon his adventure. *Private* is when an assu. is made, but the insured keeps the same secret, not deeming it fit that any should see or know their cargo or adventure, or what premio they have given, or assu. they have made: and the same being never entered in the Office is known by the name of a *Private Assu.* By the Common Law they are both of the same validity, as in reference to obtain satisfaction from the insurers, if loss or damage should happen to the adventure. But by the proceedings erected by Statute of 43 Eliz. cap. 12, only those that are entered in the Office of that Court can be sued or determined there.

The same writer summarized the advantages of an "Office pol." as follows :—1. If the pol. was lost, the entry thereof in the regis. of the Office was sufficient evidence, both at Common Law, and in the same Court; but a private pol. lost is like a deed burnt, unless there be a copy thereof or some other very strong evidence; so that then there will remain nothing but an *equitable* relief in Chancery for the satisfaction of the party. 2. The commissioners may, in case of any dispute between the assurers and assured, examine them upon oath, and determine the matter according to law and the custom of merchants; but this cannot be done at Common Law, and relief can be had only in a Court of Equity, where the party has not sufficient evidence at Law. 3. It was a Court of Equity as well as a Court of Law; and they could decree against twenty assurers at the same time; but at Law they must be sued severally. 4. They could proceed out of term as well as in term, and they might finish a cause in a fortnight's time or less. 5. The judgments there given were generally upon mature deliberation, and by persons well skilled in marine affairs; and if their sentence was thought unreasonable, the Lord Chancellor or Lord Keeper might, on appeal, examine and determine the same. 6. The Legislature had such respect for the judgments delivered in this Court, that no appeal lay from thence until the whole money decreed was deposited, and full costs paid to the appellee; and though this Court could not compel the defendant to put in bail, yet the sentence there being so expeditious was esteemed very convenient to the assurers as well as the assured. [POLICIES OF INS. COURT.]

Leybourne [*Panarithmologia*, 1693] says :

Suppose you ship £300 of goods for Jamaica; you being unwilling to run so great a hazard yourself, you go to the Assu. Office behind the Royal Exchange, in Lond., and there acquaint the clerk you will insure for £200 or £250, or, if you will, the whole £300 (for you may insure the whole or any part), upon such ship for so much goods as you have on board.

This must not be read to imply that the Chamber, or Office, undertook the ins. Underwriters assembled there for the purpose of undertaking any manner of ins. risk which offered.

In the *London Gazette* for Feb. 2–6, 1720, there appeared the following :

Publick Assu. Office on the Royal Exchange, Feb. 6, 1719 [old style]: Whereas information has been given that there have been illegal and fraudulent practices committed to the prejudice of this Office, Notice is hereby given to all persons who can make any such discoveries, that they shall meet with suitable encouragement from the Office.

It appears that the Chamber began to lessen in its attractions to insurers early in the 18th century. It has been supposed that the granting of charters to the two great Ins. Corporations in 1720, which charters expressly provided that all actions on their pol. were to be brought in the Courts at Westminster, had an influence in this direction. We are more disposed to believe that the estab. of Lloyd's Coffee House in 1710, which became the resort of a large number of underwriters, and has eventuated into the world-renowned Lloyds of the present day [LLOYDS], was the real reason of the sudden decline of the Chamber of Ins. The constitution of the Chamber of Ins. was defective, inasmuch as it appeared to have no control over the underwriters who frequented it, and undertook risks apparently under the shadow of its authority. Lloyds, on the other hand, instituted in process of time a system of membership, and so obtained at least some control over the action of its members.

The final decline of the Chambers will be treated under POLICIES OF INS. COURT.

CHAMBERS, T., AND G. TATTERSALL, pub. in 1845, *Laws relative to Buildings, comprising the Metropolitan Buildings Act, Fixtures, Ins. against Fire*, etc.

CHAMPION ASSURANCE CO. FOR LIFE, FIRE, AND GUARANTEES.—This project was set on foot in 1853, but with what especial end in view, unless to insure the successive Champions of England [Sir John Dymoke is the present Champion of the Queen of

England], or the Champions of the Ring [we do not know the name of the present holder of the belt], we cannot say.

CHAMPION LIFE ASSU., ANNU., AND REVERSIONARY INT. CO., projected in 1848 by Mr. Edward Power, Barrister-at-Law. He seems to have been content with securing the title, for no steps were taken towards complete regis.

CHANCE.—If we can see no reason why an event is more likely to happen than not to happen, we say it is a *chance* whether the event will happen or not ; or if it may happen in more ways than one, and we have no reason for supposing it will happen in any one of these ways rather than in another, we say it is a *chance* whether it will happen in any assigned way or in any other. Suppose, for example, an unknown number of balls of different colours to be placed in an urn, from which a ball is about to be extracted by a person blindfold. Here we have no reason for supposing that the ball about to be drawn will be of one colour rather than another, that it will be white rather than black, or red ; and accordingly we say it is a *chance* whether the ball will come out of a particular colour, or a different. In this instance then the term *chance* denotes simply the absence of a known cause. If, however, we are made acquainted with the number of balls in the urn, and the number there are of each of the different colours, the term is used in a definite sense. For instance, suppose the urn to contain ten balls, of which nine are white, and the remaining one black ; we say there are nine chances in favour of drawing a white ball, and one chance only in favour of drawing the black ball. Chance in this sense denotes a *way of happening*, or a particular *case* or *combination* that may arise out of a number of other possible cases or combinations ; and an event becomes probable or improbable according as the number of chances in its favour is greater or less than the number against it. *Chance* and *presumption* are also frequently used synonymously with *probability*.—*Galloway*.

CHANCE OF DYING.—A healthy man stands about 8 chances out of 1000 of dying within one year, at the age of 27 ; about 9 out of 1000 at 33 ; about 10 out of 1000 at 39 ; about 11 out of 1000 at 43 ; 12 at 45 ; 13 at 47 ; 14 at 48 ; 15 at 49 ; 16 at 50 ; 17 at 51 ; 18 at 52 ; 30 at 60 ; 44 at 65 ; 65 at 70 ; etc. Hence it costs eight times as much to ins. a given sum for one year at 70 as at 27.—*Prof. E. Wright*.

CHANCES, DOCTRINE AND LAWS OF.—Laplace, no mean authority, declared “chance” to be “but the expression of man’s ignorance.” Pope clothed the same idea in the language of poetry :

“All chance—decrees not understood.”

It certainly is not a little remarkable that out of a contemplation of the Doctrine of Chances should have become developed the theory of Life Contingencies—now regarded, and properly so, as among the *most certain* things with which we are familiar. Whether among the numerous writers who have treated of this subject the majority have been induced to do so, either by the love of scientific speculation ; the desire for gain at play ; or, as seems more prob., from an intuitive perception of a deeper philosophy than appeared upon the surface, it is not our present purpose to determine. We propose briefly to trace the direction of their inquiries, so far as it has any bearing upon ins. topics.

Poisson remarks that a problem relative to games of chance, proposed to an austere Jansenist by a man of the world, was the origin of a branch of science, now one of the most important in its effects on society.

Mr. W. T. Thomson [*Proof-sheets*, 1856] remarks : It is curious to observe that L. assu., which is eminently calculated to afford protection against risks adverse to our individual pecuniary interests, by combination and union, which has so favourable a bearing on our social and moral welfare, and which may be considered one of the most valuable discoveries of modern times, may be said to have originated from the study of the laws of chance, as observed in the experience of the gambler. It will be remarked, however, that the one is the very antithesis of the other. In L. assu. the individual is freed from risk by union for mutual protection with his fellow-men. The gambler takes the single risk upon himself, and his average, if he obtain it, can only arise from the duration of his play. In fact, the man who has the opportunity of assu. his life, and does not do it, is the gambler, taking the single risk upon himself.

In 1606 Kepler pub. his work, *De Stella Nova in pede Serpentarii*, which related mainly to the appearance of a new star two years previously : the discussions relating to the appearance of which caused him to bestow some consideration to the subject of chance. He shows in his work that even such events as throws of dice *do not happen without a cause*.

Galileo also turned his attention to chance, as is shown by his treatise, *Considerazione sopra il Giuoco dei Dadi*, the date of which is unknown. It was first pub. in 1718. [Galileo died in 1642.] It appears that a friend had consulted this learned man on the following difficulty : with three dice the number 9 and the number 10 can each be produced by six different combinations, and yet experience shows that the number 10 is oftener thrown than the number 9. Galileo made a careful and accurate analysis of all the cases which can occur, and he showed that out of 216 possible causes 27 were favourable to the appearance of the number 10, and 25 were favourable to the appearance of the number 9.

But Galileo's attention was called to the subject of Chance in another form. From his letters we learn that in his day the Florentine gentlemen, instead of employing their time in attention to ladies, or in the stables, or in excessive gaming, were accustomed to improve themselves by learned conversation in cultivated society. In one of their meetings the following question was proposed: a horse is really worth a 100 crowns; one person estimated it at 10 crowns, another at a 1000—which of the two made the more extravagant estimate? Among the persons who were consulted was Galileo; he pronounced the two estimates to be equally extravagant, because the ratio of a 1000 to a 100 is the same as the ratio of 100 to 10. On the other hand, a priest named Nozzolini, who was also consulted, pronounced the higher estimate to be more extravagant than the other, because the excess of a 1000 above a 100 is greater than that of a 100 above 10. It appears that Galileo had the same notion as Nozzolini when the question was first proposed to him, but afterwards changed his mind.

It was in 1654 that the subject was destined to receive a greater development. The Chevalier de Méré applied to Pascal for a solution of two problems, for which he was unable to find answers. The one was to ascertain in how many throws one might bet with advantage that two sixes would be thrown with two dice; the other to find a rule for dividing the stakes between two players—who were desirous of breaking off an unfinished game—in exact proportion to their relative fortune at the time, and to their chances of winning the remaining stakes. Pascal considered all the possible combinations that could be formed by the simultaneous throw of two dice, and of all the possible changes that might occur in a game of cards, interrupted at any point, and what number of them were in favour of the event for which his solution was required. He then computed the number of cases in which two sixes could be thrown with two dice, and the number of changes which in the actual state of the game of cards would secure to each player, separately, the whole or any part of the stakes, and thus arrived by proportion at the required result. Simple as this method seems (continues Mr. Samuel Brown), it was the first attempt to employ mathematics in such subjects; at least the first that, being closely followed up, led directly to the great discoveries that ensued. Boole, in his *Laws of Thought*, says this was the first of a long series of problems destined to call into existence new methods in mathematical analysis, and to render valuable service to the practical concerns of life.

Fermat, a magistrate of the Parl. of Toulouse, a mathematician of great repute in his day, was a friend of Pascal, one with whom he corresponded daily on the subject of his studies, and to whom he freely communicated his doubts and his discoveries. He forwarded to him the solution he had arrived at. The original correspondence is now lost; but it appears clear that in his solution he had merely replied to the questions put to him; and however ingenious and minute the investigation, it did not lead to ready solutions of other questions of a similar kind. Copies of the correspondence will be found in the works of the respective authors.

It was Fermat who generalized the solution, and found a rule not merely for ascertaining the value of each player's expectation in the particular case referred to, but at any moment of interrupting the game between any number of players. This was the next step, and by far the most important one, in the science of Prob. Without it the attempt of Pascal might have remained, like some previous problems and speculations by Galileo and Cardan, in obscurity till a much later period.

The correspondence of Pascal and Fermat was not generally made known at this time, though Pascal (as is shown by a letter to one of the learned societies in Paris in 1654) appears to have entertained the thought of introducing his discovery to the world. He evidently appreciated the importance of it; but about this time he met with the accident which led him to retire altogether from his scientific studies, and devote himself to those religious pursuits of which his celebrated *Provincial Letters* were the fruit. Fermat appears to have been indifferent to his discovery, and but little progress was made for nearly half a century.

Huygens, a celebrated geometrician, on the mere rumour of the questions submitted to Pascal, wrote a treatise in Dutch, which was afterwards translated into Latin by Schootens, and pub. by the latter in a work which appeared in 1658. This was the first systematic treatise which appeared on the Doctrine of Chances. It contained an analysis of the various questions which had been solved by Pascal and Fermat, and at the end five new questions were proposed; the solutions of which, simple as they may now appear, were then attended with considerable difficulty. The analysis of two of them was in fact given for the first time by Montmort half a century after their pub.—*Galloway*.

In the treatment of the subject these great men had already in effect passed beyond the immediate range of the original inquiry, and were rapidly developing the *Theory of Probabilities*. Prof. Todhunter indeed remarks: "The practice of games of chance must at all times have directed attention to some of the elementary considerations of the Theory of Prob." A still further stage of progress was near at hand. [1671.]

In 1663 was pub. a treatise *De Ludo Aleæ* by Cardan. This was included in the collected works of that author, then for the first time pub. [Cardan died in 1576]. It contains much miscellaneous matter connected with gambling, such as descriptions of

games, and an account of the precautions necessary to be employed in order to guard against adversaries disposed to cheat. The discussions relating to *Chance* form but a small portion of the treatise, which may be best described as the Gambler's Manual.—*Todhunter*.

In 1671 the Grand Pensionary De Wit came upon the scene. This great man, celebrated alike as a statesman and a mathematician of the highest repute, who had already pub., in 1650, a work on Curves, to which Condorcet refers in terms of eulogy, conceived the design of *applying the doctrines of probabilities to the valuation of human life* in the question of Government annuities. The result of his labours we have already given in some detail in our hist. of ANNU. ON LIVES.

We must confine ourselves in the remainder of the present art. as much as possible to the Doctrine and Laws of Chance. The *Theory of Prob.* as developed from the same will be treated of in detail under PROBABILITY; while the application of the Science of Prob. to the contingencies of human life will be treated of under LIFE CONTINGENCIES.

In 1692 John Arbuthnot, M.D., pub. a work, *Of the Laws of Chance; or, a Method of Calculating the Hazards of Game Plainly Demonstrated*. This was prob. the first work pub. in England on the subject. In the same year there appeared a trans. of Huygens' tract into English, accompanied by an *Essay on the Laws of Chance*, which is supposed by some to have been written by Motte, stated to have been the then Sec. of the Royal So.; but Prof. Todhunter attributes it to Arbuthnot. In this essay are some remarks relative to the advantage of the banker in the game of Pharaon. [See 1738.]

We have shown in our account of the BRESLAU TABLE OF MORT., pub. 1693, how Dr. Halley applied the Doctrine of Chance to the solution of the problems first presented to him by the study of his newly-formed T.

In 1693 there was also pub. in vol. xvii. of *Phil. Trans.*, *An Arithmetical Paradox Concerning the Chances of Lotteries*, by the Hon. Francis Roberts, F.R.S. [LOTTERIES.]

In 1699 John Craig, a Scotch mathematician, pub. a remarkable tract, of which we shall have to speak more at large hereafter. Its main feature was the application of mathematical calculations to the credibility of Gospel history; and he predicted the termination of the Christian religion at a date determined by the Doctrine of Chances!

About this date Nicolas Bernouilli pub. a thesis, *De Arte Conjectandi in Jure*, of which we do not find any detailed account. It is mentioned by Montmort.

In 1708 Pierre Redmond de Montmort pub. his *Essai d'Analyse sur les Jeux de Hazards*, of which we shall have to speak more at large under date 1714, when the 2nd ed. appeared. Todhunter says of this work of 1708 that, "with the courage of Columbus, he revealed a new world to mathematicians." He adds that much which Montmort had included in his chapter on Combinations would now be considered to belong rather to the chapter on Chances. There were numerous examples about drawing cards and throwing dice.

In 1709 M. Barbeyrac pub., *Traité du Jeu*, one of the objects of which appears to have been to show that religion and morality do not prohibit the use of games in general, or of games of chance in particular. Montmort refers to this book, which he says he had lately received from Paris. He said it was *un livre de morale*. He praises the author, but considers him to be wrong sometimes in his calculations, and gives an example. Nicolas Bernouilli, in reply, says that the author of the book is M. Barbeyrac; he agrees with Montmort in his general opinion respecting the book; but in the example in question he thinks Barbeyrac right, and Montmort wrong.

In 1710 De Moivre submitted to the Royal So. a paper, *On the Doctrine of Chances*, and the same was pub. in the *Phil. Trans.* for that year. This paper was afterwards expanded, and pub. in book form. [See 1718.]

In 1713 the *Ars Conjectandi* of James Bernouilli was pub. under the circumstances we have already explained. [BERNOUILLI, JAMES.] The author solved four out of the five problems which Huygens had placed at the end of his treatise. The last of the five problems which Huygens left to be solved was the most remarkable of all. It is the first example on the *Duration of Play*, a subject which afterwards exercised the highest powers of De Moivre, Lagrange, and Laplace. James Bernouilli solved the problem, and added, without a demonstration, the result for a more general problem, of which that of Huygens was a particular case. "Perhaps (says Todhunter) the most valuable contribution to the subject which this part of the work contains, is a method of solving problems in chance which James Bernouilli speaks of as his own, and which he frequently uses." Finally, "We may observe that Bernouilli seems to have found—as most who have studied the subject of chances have also found—that it was extremely easy to fall into mistakes, especially by attempting to reason without strict calculation."

In 1714 the 2nd ed. of Montmort's essay appeared [1st ed., 1708]. It was much more bulky than the first ed. He makes some judicious obs. on the foolish and superstitious notions which were prevalent among persons devoted to games of chance, and proposes to check these by showing, not only to such persons, but to men in general, that there are rules in chance, and that for want of knowing these rules mistakes are made which entail adverse results; and these results men impute to destiny instead of their own ignorance. The work is divided into four parts. The 1st contains the theory of combinations; the 2nd discusses certain games of chance depending on cards; the 3rd discusses certain games of chance depending on dice; the 4th part contains the solution

of various problems in chances, including five problems proposed by Huygens. Todhunter concludes an exhaustive criticism of this ed. as follows :

Montmort's work, on the whole, must be considered highly creditable to his acuteness, perseverance, and energy. The courage is to be commended which led him to labour in a field hitherto so little cultivated, and his example served to stimulate his more distinguished successor. De Moivre was certainly far superior in mathematical power to Montmort, and enjoyed the great advantage of a long life, extending to more than twice the duration of that of his predecessor; on the other hand, the fortunate circumstances of Montmort's position gave him that abundant leisure which De Moivre in exile and poverty must have found it impossible to secure.

De Moivre spoke in very high terms of Montmort's work, and said that therein he had given "many proofs of his singular genius and extraordinary capacity."

In 1714 also M. Barbeyrac pub. in Amsterdam a discourse, *Sur la Nature du Sort*. In the same year Nicolas Bernouilli transmitted to the Royal So. a problem in the doctrine of chances, which was pub. in the *Phil. Trans.*

In 1714 also appeared a work, *Christiani Hugonii Libellus de Ratiociniis in Ludo Aleæ ; or, the Value of all Chances in Games of Fortune ; Cards, Dice, Wagers, Lotteries, etc., Mathematically Demonstrated*. Lond. : Printed by S. Keimer for T. Woodward, near the Temple Gate, in Fleet St., 1714. This was a trans. of Huygens' treatise [1658], by W. Browne. In his adv. to the reader, Browne refers to a trans. of Huygens' treatise which had been made by Arbuthnot ; he also notices the labours of Montmort and De Moivre.

In 1718 De Moivre pub., in book form, *The Doctrine of Chances ; or, a Method of Calculating the Prob. of Events at Play*. This, as we have said, was an expansion of his paper of 1710. A 2nd ed. of this work was pub. in 1738 ; 3rd ed., 1756 (after the author's death). The author says in his preface :

'Tis now about 7 years since I gave a specimen in the *Phil. Trans.* of what I now more largely treat of in this book. The occasion of my then undertaking this subject was chiefly owing to the desire and encouragement of the Hon. Francis Robartes, Esq. (now Earl of Radnor), who, upon occasion of a French tract, called *L'Analyse des Jeux de Hazards*, which had lately been pub., was pleased to propose to me some problems of much greater difficulty than any he had found in that book ; which having solved to his satisfaction, he engaged me to methodize those problems, and to lay down the rules which had led me to their solution. After I had proceeded thus far, it was enjoined me by the Royal So. to communicate to them what I had discovered on this subject ; and thereupon it was ordered to be put in the *Trans.*, not so much as a matter relating to play, but as containing some general speculations not unworthy to be considered by the lovers of truth.

Many important results were here first pub. by De Moivre, although it is true that these results already existed in manuscript in the *Ars Conjectandi*, and the correspondence between Montmort and the Bernouillis.—*Todhunter*.

In the *Hist. of the Academy of Paris* for 1728 [pub. 1730], there is a notice respecting some results obtained by Mairan—*Sur le Jeu de Pair ou Non*. The art. is not by Mairan.

In the 9th vol. of *Actorum Eruditorum . . . Supplementa*, pub. in Leipzig in 1729, there is a memoir : *Johannis Rizzetti Ludorum Scientia, sive Artis Conjectandi elementa ad alias applicata*, from which it appears that Daniel Bernouilli had a controversy with Rizzetti and Riccati relating to some problems in chances. It led to nothing new, and chiefly turned upon the proper definition of "expectation."

In the *Hist. of the Academy of Paris* for 1730 [pub. 1732], there is a memoir by M. Nicole, entitled : *Examen et Résolution de quelques Questions sur les Jeux*. In the same vol. is another memoir by Nicole. But, in each case, Montmort and De Moivre had already covered the same ground.

In the *St. Petersburg Memoirs* (vol. 5) for 1730-31, there is an interesting paper by Daniel Bernouilli on the relative values of the expectations of individuals who engage in play, or stake sums on contingent benefits, when regard is had to the difference of their fortunes ; a consideration which in many cases it is necessary to take into account ; for it is obvious that the value of a sum of money to an individual depends not merely on its absolute amount, but also on his previous wealth. On this principle Bernouilli has founded a theory of moral expectation, which admits of numerous and important applications to the ordinary affairs of life.—*Galloway*.

In 1733 the Compté de Buffon communicated to the Academy of Sciences in Paris the solution of some problems in chances. [See 1777.]

In 1738 there was pub. another ed. of the trans. of Huygens, spoken of under date 1692, with the following title : *Of the Laws of Chance ; or, a Method of Calculation of the Hazards of Game, plainly demonstrated, and applied to Games at present most in use ; which may be easily extended to the most intricate cases of Chance imaginable*. The 4th ed. revis'd by John Ham. By whom is added a Demonstration of the Gain of the Banker in any circumstance of the Game call'd Pharaon ; and how to determine the Odds at the Ace of Hearts, or Fair Chance ; with the Arithmetical Solution of some Questions relating to Lotteries ; and a few Remarks upon Hazard and Backgammon. London : Printed for B. Motte and C. Bathurst, at the Middle Temple Gate in Fleet-street, M.DCC.XXXVIII. This second part, which is here attributed to John Ham, Todhunter believes to have been taken in greater part from De Moivre, who however is not named in the work.

In 1738 also there was pub. 2nd ed. of De Moivre's *Doctrine of Chances*, "fuller, clearer, and more correct than the first," by admission of the author. [See 1718.]

In 1739 there was pub. in Florence, "*Par Mr. D. M.*," a work, *Calcul du Jeu appellé par les François le trente-et-quarante, et que l'on nomme à Florence le trente-et-un*. . . .

The problem is solved by examining all cases which can occur, and counting up the number of ways. The operation is most laborious, and the work is perhaps the most conspicuous example of misdirected industry which the literature of games of chance can furnish.—*Todhunter*.

In 1740 Mr. Thomas Simpson pub., *The Nature and Laws of Chance, containing among other Particulars* [see below]. *The whole after a New, General, and Conspicuous Manner, and Illustrated with a great variety of Examples*. The part of the title just omitted is as follows :

(1) The solutions of several abstruse and important problems. (2) The doctrine of combinations and permutations clearly deduced. (3) A new and comprehensive problem of great use in discovering the advantage or loss in lotteries, raffles, etc. (4) A curious and extensive problem on the duration of play. (5) Problems for determining the prob. of winning at bowls, coits, cards, etc. (6) A problem for finding the trials wherein it may be undertaken that a proposed event shall happen or fail a given number of times. (7) A problem to find the chance for a given number of points on a given number of dice. (8) Full and clear investigations of two problems, added at the end of Mr. De Moivre's last ed., one of them allowed by that great man to be the most useful on the subject, but their demonstrations there omitted. (9) Two new methods for summing of series.

This work engaged some attention. Simpson implies in his preface that his design was to produce an introduction to the subject less expensive and less abstruse than De Moivre's work ; and in fact Simpson's work may be considered as an abridgment of De Moivre's. Simpson's problems are nearly all taken from De Moivre, and the mode of treatment is substantially the same. The very small amount of new matter which is contributed by a writer of such high power as Simpson shows how closely De Moivre had examined the subject, as far as it was accessible to the mathematical resources of the period.—*Todhunter*.

In the *Hist. of the Berlin Academy* for 1751 [pub. 1753] there appeared Euler's first memoir, entitled *Calcul de la Probabilité dans le Jeu de Rencontre*. The problem discussed is that which is called the game of Treize, which had previously been treated of by Montmort and Nicolas Bernoulli, and more simple results than those now given had been obtained by the latter. [See also 1764.]

In the 2nd vol. of Dodson's *Mathematical Repository*, dated 1753, there are some problems on Chances, which, however, present nothing new or important.

In 1754 Edmund Hoyle pub. *An Essay towards making the Doctrine of Chances easy, to those who understand Vulgar Arithmetic only, &c., &c., &c.* The preface says :

In order to put play upon the most equal foot, in this treatise you have practical rules and examples, plainly expressed in words at length, whereby all various cases and the odds of games of any kind, may be easily resolved, without any knowledge of algebra or logarithms ; by which the most unskilful person in betting his money is put upon an equal foot with those who have applied themselves to this study for many years.

He also gave : " A short table of the powers of two, showing the odds of winning or losing any number of games upon an equality of chance."

In 1754 D'Alembert contributed to the *Encyclopédie* [Paris] an art., *Croix ou Pile*, wherein he proposes to find the chance of throwing *head* in the course of two throws with a coin. He deals with questions of play also. [See 1761.]

The result of all De Moivre's laboured and continuous investigation of the subject was embodied in this proposition—which we believe only appeared in the last ed. of his work, 1756, revised just before and pub. after his death—" *That although chance produces irregularities, still the odds will be infinitely great, that in process of time, those irregularities will bear no proportion to the recurrency of that order which naturally results from ORIGINAL DESIGN.*"

In 1757 there was pub. in Padua a quarto vol., *Dell' Azione del Caso nelle Invenzioni, e dell' influsso degli Astri ne' Corpi Terrestri Dissertazioni due*. The first dissertation is on the influence of Chance in inventions. It recognizes this influence, and gives various examples. The second is on the influence of the celestial bodies on men, animals, and plants ; and is intended to show that there is no influence produced in the sense in which astrologers understand such influence. The author expressed more belief in the squaring of the circle than in the Newtonian theory of gravitation then recently propounded.

In 1758 Mr. Samuel Clark pub., *The Laws of Chance ; a Mathematical Investigation of the Prob. arising from any proposed Circumstances of Play, applied to the Solution of a great variety of Problems relating to Cards, Bowls, Dice, Lotteries, etc.* The work is written in a very plain and simple style. It is almost entirely based upon De Moivre and Simpson ; but it does not contain anything new or important.

In the 2nd vol. of his *Opuscles Mathématiques*, pub. 1761, D'Alembert says, in reference to chance and probability, that we must distinguish between what is *metaphysically* possible and what is *physically* possible. In the first class are included all those things of which the existence is not absurd ; in the second are included only those things not too extraordinary to occur in the ordinary course of events. It is *metaphysically* possible to throw two sixes with two dice a hundred times running ; but it is *physically* impossible, because it never has happened, and never will happen. He applied this principle in various forms.

In vol. v. of the *Acta Helvetica*, 1762, there is a memoir by M. Mallet, entitled, *Recherches sur les avantages de trois Joueurs qui font entr'eux une Poule au trictrac ou à un autre Jeu quelconque*. The problem had been treated by De Moivre, but was now extended by Mallet.

In the *Phil. Trans.* for 1763 [pub. 1764] there is the following memoir : *An Essay towards solving a Problem in the Doctrine of Chances. By the late Rev. Mr. Bayes, F.R.S., communicated by Mr. Price in a Letter to John Canton, A.M., F.R.S.* This letter commences : "Dear Sir,—I now send you an essay which I have found among the papers of our deceased friend Mr. Bayes, and which, in my opinion, has great merit, and well deserves to be preserved." The essay of Bayes follows the introductory letter. It begins with a brief demonstration of the general laws of the Theory of Prob., and then establishes his theorem. Dr. Price added : *An Appendix containing an application of the foregoing rules to some particular case.*

The *Phil. Trans.* for 1764 [pub. 1765] contains a memoir : *A Demonstration of the second Rule in the Essay towards the solution of a Problem in the Doctrine of Chances, pub. in the Phil. Trans., vol. liii., communicated by the Rev. Mr. Richard Price in a Letter to Mr. John Canton, M.A., F.R.S.* This memoir contains Bayes' demonstration of his principal rule for approximation ; and some investigations by Dr. Price which also relate to the subject of approximation.

In the *Hist. of the Berlin Academy* for 1764 [pub. 1766] was a further memoir by Euler : *Sur l'avantage du Banquier au Jeu de Pharaon.* Euler here merely solves the problems which had been already solved by Montmort and N. Bernouilli, to whom, however, he makes no reference [see 1751]. In the same vol. were two other memoirs on the same problem by Beguelin.

In the *Hist. of the Berlin Academy* for 1768 [pub. 1770] there is a contribution from John Bernouilli : *Mémoire sur un Problème de la Doctrine du Hazard.* It requires no special comment here. [MARRIAGE.]

In 1772 Mr. Fenn pub. *Calculations and Formulæ for determining the advantages or disadvantages of Gamesters.*

In the *Mémoires par divers Savans* [vol. vi.], 1774, there are two memoirs by Laplace. The first : *Mémoire sur les suites récurro-récurrentes et sur leurs usages dans la théorie des hazards.* The author considers three problems. The first is the problem of the duration of play, supposing two players of unequal skill and unequal capital. Todhunter says that Laplace rather shows how the problem may be solved than actually solves it. He begins with the case of equal skill and equal capital, and then passes on to the case of unequal skill. He does not actually discuss the case of unequal cap., but intimates that there will be no obstacle except the length of the process. The second memoir is on Prob. [PROBABILITIES.]

In the *Select Memoirs of the Academy of Berlin* for 1775 [pub. 1777] there is a paper by Lagrange which treats of the Theory of Chances. The 5th problem therein relates to the duration of play in the case in which one player has unlimited capital. This subject had been previously treated by De Moivre.

In 1776 was pub. anon. *Reflections on Gaming, Annuities, and Usurious Contracts*; and in the same year some *Essays on Mathematical Subjects*, by W. Emerson, including one on the Laws of Chance. "Emerson's work would be most dangerous for a beginner, and quite useless for a more advanced student."—*Todhunter.*

In 1777 Buffon pub. his *Essai d'Arithmétique Morale.* Struck by the remarkable speculations of Daniel Bernouilli, on the subject of the relative gain or loss at play on the private fortunes of the players, he commenced to write in 1760, and pub. in 1777, that most eloquent and impressive attack on the immorality, the danger, and the vicious principle of government gaming tables, and contributed perhaps more than any other to their gradual extinction in some countries, and the disrepute to which they have justly fallen in others. "The Doctrine of Chances (says Mr. Brown) has seldom been converted to a more honourable or benevolent purpose, and never with greater eloquence and force." The following is one of Buffon's ingenious arguments : He supposes two players of equal fortune, and that each stakes half of his fortune. He says that the player who wins will increase his fortune by a third, and the player who loses will diminish his by a half ; and as half is greater than a third, there is more to fear from loss than to hope from gain. Other writers, as we have seen, have touched upon this same consideration. [MATHEMATICAL EXPECTATION.] [MONEY.]

In the *Select Berlin Memoirs* for 1780 [pub. 1782], there is one by Herr Prevost, *Sur les principes de la Théorie des gains fortuits.* This simply consists of an attempted criticism of the elementary principles laid down by James Bernouilli, Huygens, and De Moivre.

In the *Select Memoirs of the Berlin Academy* for 1784 [pub. 1786] there is one by D'Anieres, entitled *Réflexions sur les Jeux de Hazard.* The memoir is not mathematical ; it alludes to the fact that games of hazard are prohibited by governments, and shows that there are different kinds of such games, namely, those in which a man may ruin his fortune, and those which cannot produce more than a trifling loss in any case.—*Todhunter.*

In 1787 W. Painter pub., *Guide to the Lottery ; or, the Laws of Chance.* In the same year John Johnson pub., *A Complete Abridgment of the Laws respecting Gaming and Usury, with Adjudged Cases.*

In 1792 there was pub. in Paris, in connexion with the *Encyclopédie Méthodique*, a special vol. entitled *Dictionnaire des Jeux, faisant suite au Tome III. des Mathématiques.* There are no mathematical investigations, but in several cases the numerical values of the chances are given. The work does not appear to have been completed.

In the *Commentaries of the Royal Scientific So. of Gottingen* (vol. xii.) for the year 1793-4 [pub. 1796] there is a memoir by Herr Trembley: *Disquisitio Elementaris circa Calculum Probabilium*, wherein are discussed nine problems in Chance, most of which had been dealt with by De Moivre. [See 1802.]

In 1795 the Baron Maseres pub. a translation into English of the famous *Ars Conjectandi* of James Bernouilli; also an English trans. of Wallis's *Algebra*. These were included in a vol. of reprints, under the title of *The Doctrine of Permutations and Combinations, being an essential and fundamental part of the Doctrine of Chances; as it is delivered by Mr. James Bernouilli in his excellent Treatise on the Doctrine of Chances, intitled Ars Conjectandi, and by the celebrated Dr. John Wallis, of Oxford, in a tract intitled from the subject, and published at the end of his Treatise on Algebra: In the former of which Treatise is contained a Demonstration of Sir Isaac Newton's famous Binomial Theorem, in the cases of Integral powers, and of the Reciprocals of Integral powers; together with some other useful mathematical tracts.*

In the *Memoirs of the Berlin Academy* for 1802 [pub. 1804] is a further paper by Herr Trembley: *Observations sur le calcul d'un Jeu de Hazard*. The game considered is that of *Hex*, which had been previously considered by N. Bernouilli and others.

In 1808 an article appeared in *Nicholson's Journal* (xxi. p. 204) by William Saint: *Remarks on the Doctrines of Chance, in answer to Optimath.*

In 1812 was pub. in Paris: *Essais Métaphysiques et Mathématiques sur le Hazard*, by Francis Corbaux.

In 1814 Mr. Wm. Rouse pub. *The Doctrine of Chances; or, the Theory of Gaming*; and a few years later [prob. about 1820] he pub., *The Doctrine of Chances; or, the Theory of Gaming made easy to every person acquainted with common Arithmetic: so as to enable them to calculate the prob. of events in Lotteries, Cards, Horse-racing, Dice, etc.; with Tables on Chance never before pub., which from mere inspection will solve a great variety of questions.* As we cannot fix the precise date of the pub. of the last-named work, which is evidently only an enlargement of the former one, we shall review its contents at this point. The uses of a knowledge of the Doctrine of Chances are explained by Mr. Rouse as follows:

If, for a moment, such an imaginary being as *luck* is allowed to influence the actions of men (as it seems generally amusing to believe), yet it will follow to be equally useful to know the laws of chance, as they teach a man how to secure to himself more ways of this said *luck* than his neighbour or opponent, who may know nothing of these laws or rules: and it cannot be denied by the advocates for *luck* that if one man has five ways to win a game, and another only two, the first man is more likely to be *lucky* than the second.

Now the laws of chance are nothing more than rules to teach a person how many different ways there are to obtain an object; and if he finds there are fifteen ways, divided into two unequal parts, as 10 and 5, has he not a great advantage over his opponent, who, if he is ignorant of such rules, is as likely to choose one part as another? If a man is acquainted with the laws of chance, he will not be compelled to take that side which has most chances to win unless he likes it; for if he thinks he shall be more lucky with the 5 chances, he can take them, and leave the 10 chances for his opponent, which few adversaries will object to. Therefore, whether *luck*, or *no luck*, it must be greatly useful to know the laws of chance, as they enable a person to measure his advantage or disadvantage in any event, and teach him to estimate the comparison between chance and design.

Again, advancing upon the subject:

Although chance is generally considered to be *effect without design*, yet throughout universal nature all events appear to be governed by immutable laws, which have existed from the beginning of time, whatever *partial* irregularities may arise; and the utmost stretch of the human mind has been only able to discover a few of those laws or rules by which the phenomena of nature appear to be governed; but the great first cause that produced those laws is unknown to us.

The existence of our species and the near equality of the sexes, which have continued for near six thousand years, *cannot* be called *effect without design*; and yet this is as much an object of the doctrine of chances as any event depending on the cast of a die or the combinations of cards; for if we suppose an equality of chance, whether the next child to be born will be a boy or a girl, the chances are 3 to 1 against the first two children being boys: as there may be born either boy and boy, girl and girl, boy and girl, or girl and boy, being four ways, and only one of them for boy and boy; therefore 3 chances to 1 against the event happening: the same as throwing a die or a counter with two faces, a red and a black one; the chances are 3 to 1 against two red faces coming up in two throws; and upon the same supposition of equality it can be demonstrated that the odds are 772 to 252 that in 20 births there will not be exactly 10 boys and 10 girls; yet (although partial inequalities may and do arise in any assignable number of births, and which seem to imply chance), it must be admitted it was *originally designed* that the *whole* should be governed by this ratio of equality, or nearly so, ages before men began to think of the philosophy of causes, or had discovered any of those laws or rules of nature, all of which existed from the beginning, and will remain through time, whether the mind of man has discovered them or not. pp. vii. and viii.

In 1819 an art. on Chance appeared in *Rees' Cyclo.* This was written by Mr. W. Morgan.

In 1824 Mr. Francis Corbaux pub. *An Inquiry into the National Debt, and into the Means and Prospects of its Redemption; with an Appendix on State Lotteries, and new Illustrations of the Doctrine of Chances.*

In 1828 Mr. [now Sir] John Wm. Lubbock read before the Cambridge Philosophical So. a paper: *On the Calculation of Annu., and on some questions in the Theory of Chances.* The paper was printed in the *Trans.* of that So., and has been reprinted in the *Assu. Mag.* [vol. v., p. 197]. It is of a purely scientific character; but we have had occasion to quote from it in these pages.

In 1853 there was pub. in Paris: *Traité du Trente-quarante, contenant des analyses et des faits pratiques du plus haut intérêt suivis d'une collection de plus de 40,000 coups de Banque. Chaque operation donne le dessin des figures appliquées et l'importance des résul-*

tats. Par G. Gregoire, Membre de plusieurs sociétés, Auteur du *Manuel théorique et pratique du Jeu de Dames à la Polonoise.*

In 1855 Dr. W. A. Guy read before the Inst. of Act. a paper: *The analogy existing between the aggregate effects of the operations of the Human Will, and the Results commonly attributed to Chance.* This paper is printed in the *Assu. Mag.* [vol. v. p. 315], and will be more particularly spoken of under HUMAN WILL.

In 1856 there appeared in the *Quarterly Journal of Science* a paper: *On the Application of the Doctrine of Chances as it regards the subdivision of risks.* This paper is reprinted in the *Assu. Mag.* [vol. vi. p. 287]. It will be referred to more particularly under RISKS, THEORY OF.

In 1865 was pub. by Prof. Todhunter, *A Hist. of the Mathematical Theory of Prob. from the time of Pascal to that of Laplace.* It is from this work that we have frequently quoted in the present art.

As we have already said, it was out of the earlier investigations of the Law of Chances, that the Theory of Prob. was enunciated. The teachings of this latter theory were soon applied, with the greatest advantage, to the development of the Science of Life Contingencies; hence, in our art. upon LIFE CONTINGENCIES, and upon PROBABILITIES, many of the writers whose works have been here mentioned will be met with again.

CHANDLER, S. C., JUN., Act. of *Continental L.*, N.Y. In 1872 he contributed to the *Spectator* Ins. Journal of N.Y. a paper, *On the Law of the Ages at which L. Ins. are Effected.* This paper [reprinted in *Assu. Mag.* vol. xvii. p. 56] possesses very considerable interest; and we shall speak of it more particularly. [INSURED LIFE.]

CHANGE OF NAME.—See NAME, CHANGE OF.

CHANGE OF VENUE.—In the case of *McLaughlin v. Royal Exchange Assu. Corp.*, which came before the Irish Courts in 1844, motion was made for a Change of Venue to the county where the fire occurred. The motion was supported by an affidavit setting forth: "That to enable the defendants to bring their defence fairly and fully before a jury, it will be necessary that the said jury, or some of them, should have an opportunity of viewing the shop in which the said fire took place," etc. The affidavit was held insufficient, inasmuch as it did not state why such a view was necessary to the defence.

In a previous case, *McDonnell v. Carr* (1832), on a similar affidavit, the venue was changed.

CHANGE OF VOYAGE.—A Change of Voyage takes place when, either before or after sailing, the assured definitively abandons all thought of proceeding to the port of destination set down in the pol.—*Casaregis.*

The great distinction between a deviation and a change or abandonment of voyage is, that in the former the orig. voyage, as described in the pol., is not given up or lost sight of, while in the latter it is.

A *Deviation*, says Chancellor Kent, is not a change of the voyage, but of the proper and usual course of performing it.

The effect of a Change of Voyage is to discharge from all liability on the pol. from the moment the purpose of so changing the voyage is definitively formed. Hence if the purpose of changing the voyage be fixed before the commencement of the risk, the pol. is void *ab initio*, and the risk never attaches; or, if it be not formed till after the ship has sailed, the underwriter is discharged from all liability for losses which may accrue subsequently to its having been formed, although such loss may take place while the ship is on the track common both to the voyage ins. and to that which is substituted for it.—*Arnould.*

The Marine Ins. Ordin. of *France* provides to the same effect.

CHAPLIN, FREDERICK, Sec. Lond. branch of *Edinburgh L.*, which position he has occupied since 1851. He was at first associated with Mr. Stainforth, the Resident Director of the Co. in Lond.

CHARGE.—To lay a duty upon any one; to acquaint any with the nature of their duty—as a judge charging a jury. An act done, binding on the party who does it—as a borrower "charging" his lands by way of security; hence, when the advance is repaid, a "discharge" becomes necessary.

CHARGES [a term used in *Marine* Ins.].—These are expenses applicable to a particular interest, as to the ship alone, or the cargo alone. They are incidental to "total loss," and to "average"; and the liability of the underwriter to contribute to them is properly dependent upon his liability for the loss which has occasioned them, or to avoid which they have been incurred. This, on the general rule that "the accessory follows its principal."—*McArthur.*

CHARITABLE PURPOSES.—Life Ins. has often been propounded as a means of aiding Charitable and Benevolent objects. The earliest instance of this character we have met with is by way of appendix to the *Proposal for Estab. a Perpetual Assu. Office*, pub. early in the 18th century, and is as follows:

A Charitable Proposal for the augmentation of small Vicarages and for Erecting of Publick Libraries and Free Schools for the Education of Poor Children in all the Counties of England, or for any other Charitable Use.

That any number of persons may join in their contributions and pay £6 a year, jointly, during the life of any man or woman they shall name, provided the person named be not above 55 years of age; and when the person dies upon whose life they paid the money, the said *Contributors* shall be entitled to an equal dividend of £10,000, together with other advantages, besides £3 out of every £6 which they shall have paid into the office.

That the said contributors shall dispose and order all or any part of the money arising from such claim or claims, to any church, school, or library, etc., as they themselves shall judge fit.

That for the encouragement of so charitable and good a work, the master of the office will and does hereby relinquish the £3 p.c. *drawback* mentioned in article 29, to any person or persons who shall subscribe upon a charitable account; and the said £3 shall be wholly and solely appropriated and apply'd to the uses above mentioned as the several *Contributors* of each £6 shall think fit.

'Tis hoped the nobility and gentry—especially the dignified clergy—will readily promote and encourage so good, so useful, so beneficial, and so charitable a design.

If sixty persons will join and pay but 2s. each per ANN. upon the life of the present incumbent of any parish, or any other person, partly for the benefit of the present incumbent's family after his decease, and partly for the benefit of his successors, as the contributors shall think fit, what noble acts of charity might they do at a small expense. So if thirty.—A.S. [PROVIDENT FUNDS.]

CHARITABLE SO. AT LOND. STONE.—This was an office founded for granting apprenticeship ins., marriage ins., and service ins. It has been spoken of under those several heads.

CHARITABLE SO., at Golden Heart, near St. Bartholomew's Hospital, West Smithfield.—This is one of the numerous so-called ins. projects designated as "Little Goes," founded in the reign of Queen Anne. Its date appears to be 1712. [GAMBLING INS.]

CHARLESTON, SOUTH CAROLINA.—This city has suffered very severely from fire on several occasions, viz.—1778, property of the value of £100,000 was destroyed. 1796, 300 houses were destroyed. 1838, there were destroyed 1158 buildings, covering 145 acres of ground. 1861, large fire occasioned by the bombardment of the city, Dec. 1861, by the Federals: property of the estimated value of £1,600,000 destroyed. Several English offices formerly carried on a large and profitable bus. in this city; but during the recent war they nearly all closed their agencies.

CHARLON, M., Man. of Spanish Phenix, Madrid.—A paper of his, *On a method of obtaining De Moivre's formula in the simplest terms*, was communicated in 1869 to the *Assu. Mag.* [vol. xv. p. 141] by Herr Pimentel, Prof. of Mathematics at the Hague.

CHARLTON, EDWARD, was Sec. of *Albion Life* for some years; he retired about 1848.

CHARTER.—An evidence of things done between man and man, as a Charter-party; also a Statute or Act of Parl. A "Royal Charter" is a written instrument granting certain privileges or exemptions to towns, corporations, or bodies politic. They generally therefore create a monopoly. Regarding the precise effect of a charter upon the legal constitution of an ins. or other co. we shall speak of under INCORPORATION.

In the early days of ins. asso. the only appreciable way of obtaining a legal constitution was by means of direct Charter from the Crown or from Parliament. The difficulties of obtaining these will be better appreciated after the reader has consulted our art., MARINE INSURANCE, HIST. OF. It will suffice here to state that they frequently were only obtained after years of litigation, or, as in two very famous instances, by payment of large sums of money. The obstacles were so great that many of the most powerful companies shrank from the attempt. Others more brave were defeated. See *EQUITABLE SOCIETY*.

The first Charter obtained by any ins. asso. was that granted to the *Amicable* by Queen Anne, in 1706; then followed the *Lond. Assu.* and the *Royal Exchange* in 1720; and but very few have since obtained the privilege, except in the case of the Irish and Scotch Cos., where a different state of the law granted facilities for incorp. by Charter. [INCORPORATION.] [LEGISLATION FOR INS. ASSO.]

CHARTER-PARTY.—An agreement in writing, sometimes under seal, by which a shipowner agrees to let an entire ship, or the principal part thereof, to a merchant, for the carriage of goods on a specified voyage, or during a specified period, for a sum of money which the merchant agrees to pay as *freight* for their carriage. By such an agreement the ship is said to be *chartered* to the merchant, who is called the *charterer*. There are certain terms usually to be found in all Charter-parties, viz. a statement of the burden [capacity] of the ship, an undertaking by the shipowner, that the ship being seaworthy and furnished with necessaries, shall be ready by a certain day to receive the cargo, shall sail when loaded, and deliver her cargo at her port of destination—which may be one of several ports to be in due course indicated (the act of God or the King's enemies excepted): the charterer, undertaking to load and unload the ship within a certain number of days, called the *lay*, or *running* days; and if he detains her longer, to pay *demurrage*, i.e. a certain sum of money for each extra day; and also to pay the freight agreed.

Charter-parties are said to have been first used in England about A.D. 1243. The term is said to be derived from the Lat. *Charta partita*, a divided charter, because orig. there was only one instrument made for both parties; this was cut in two, each taking a portion; and these parts were joined on the return of the ship, in token that each had performed his part.

Many complicated legal points arise in connexion with Charter-parties; and their conditions vary with the varying circumstances of each particular voyage. We have only to consider them in relation to the contract of marine ins., of which they very frequently form the basis.

The following is the most simple form of Charter-party; from that they extend to every conceivable variation:

This Charter-party indented, made etc., between *A.B.*, etc., mariner, master, and owner of the good ship or vessel, called etc., now riding at anchor, etc., of the burden of 200 tons, or thereabouts, of the one part, and *C.D.* of etc., merchant, of the other part, witnesseth, That the said *A.B.*, for the consideration hereinafter mentioned, hath granted and to freight letten, and by these presents doth grant and to freight let, unto the said *C.D.*, his executors, administrators, and assigns, the whole tonnage of the hold, stern-sheets, and half-deck of the said ship or vessel, called, etc., from the port

of London to etc., in a voyage to be made by the said *A.B.* with the said ship, in manner hereinafter mentioned (that is to say), to sail with the first fair wind and weather that shall happen after, etc., next, from the port of London with the goods and merchandize of the said *C.D.*, of his factors or assigns, on board, to etc., aforesaid (the act of God, the Queen's enemies, fire, and all and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind, in so far as ships are liable thereto, during the said voyage, always excepted), and there unlade and make discharge of the said goods and merchandizes; and also shall there take into and on board the said ship again the goods and merchandizes of the said *C.D.*, his factors or assigns, and shall then return to the port of London with the said goods, in the space of, etc., limited for the end of the said voyage. In consideration whereof, the said *C.D.*, for himself, his executors, and administrators, doth covenant, promise, and grant, to and with the said *A.B.*, his executors, administrators, or assigns, by these presents, that the said *C.D.*, his executors, administrators, factors, or assigns, shall and will well and truly pay, or cause to be paid, unto the said *A.B.*, his executors, administrators, or assigns, for the freight of the said ship and goods, the sum of etc. (or so much per ton), within twenty-one days after the said ship arrived, and goods returned, and discharged at the port of London aforesaid, for the end of the said voyage; and also shall and will pay for demurrage (if any shall be by default of him, the said *C.D.*, his factors or assigns) the sum of etc., per day, daily, and every day, as the same shall grow due. And the said *A.B.*, for himself, his executors, and administrators, doth covenant, promise, and grant, to and with the said *C.D.*, his executors, administrators, and assigns, by these presents, that the said ship or vessel shall be ready at the port of London to take in goods by the said *C.D.*, on or before etc., next coming. And the said *C.D.*, for himself, his etc., doth covenant and promise, within 10 days after the said ship or vessel shall be thus ready, to have his goods on board the said ship, to proceed on the said voyage; and also, on arrival of the said ship, etc., within etc. days, to have his goods ready to put on board the said ship, to return on the said voyage. And the said *A.B.*, for himself, his executors and administrators, doth further covenant and grant, to and with the said *C.D.*, his executors, administrators, and assigns, that the said ship or vessel now is, and at all times during the voyage shall be, to the best endeavour of him, the said *A.B.*, his executors and administrators, and at his and their own proper costs and charges, in all things made and kept stiff, staunch, strong, well apparelled, furnished, and provided, as well with men and mariners sufficient and able to sail, guide, and govern the said ship, as with all manner of rigging, boats, tackle, and apparel, furniture, provision, and appurtenances, fitting and necessary for the said men and mariners, and for the said ship during the voyage aforesaid. In witness, etc.

In 1815 by the 55 Geo. III. c. 184, the stamp duty on Charter-parties was fixed at 35s., with add. if the number of words exceeded 2160. In 1842 by the 5 & 6 Vict. c. 79, the duty was reduced to 5s., but with a wide definition as to what constituted a Charter-party. In 1865 by 28 & 29 Vict. c. 96, the duty was reduced to 6d.

CHARTERED SHIP.—A ship hired or freighted.

CHARTERER.—A person who charters or hires a ship for a voyage, or for a certain period.

CHEMICAL PROCESSES, FIRES BY.—Fire losses resulting from Chemical Processes are not covered by F. ins. pol., unless a special proposal has been submitted to the office; special rates paid; and a special pol. issued. [MANUFACTURING PROCESSES.]

CHEMICAL PRODUCTS.—Before the Parl. Committee on *Fire Protection* which sat in 1867, Prof. Lyon Playfair was examined at much length respecting the tendency of particular chemical products to explode. They were classified by him as follows:

Highly Dangerous.—Gunpowder, gun-cotton, nitro-glycerine, alcohol, ether, camphene, sulphide of carbon, naphtha, benzole, phosphorus, turpentine, petroleum, and all burning oils below the legal firing point imposed by the Act of Parl., namely, 100 degrees.

Less Dangerous.—Sulphur, pyrites, vegetable and animal oils, and fats, all burning oils with a firing point above 120 or 130 degrees (130 is usually taken); bees-wax, paraffin-wax, candles, lubricating oils, greases, pitch, and bitumens.

Least Dangerous.—Coals, charcoal, and other fuels; vegetable fibres, and fabrics made from them, such as cotton, flax, hemp, and jute.

Some substances, such as alcohol, camphene, naphtha, and so on, take fire at common temperatures, and in one respect are more dangerous than gunpowder: for *they will of themselves travel to flame*, while in order to effect explosion fire must be carried to gunpowder. The vapour of these volatile bodies will find its way to flame, or fire, at a considerable distance. The Professor declared that much of the petroleum sold in shops becomes inflammable at a temperature ranging from 70 to 100 degrees. His knowledge of the spontaneous ignition of such bodies was thus illustrated:—

Are you aware of any great fire having taken place from the ignition of those substances?—Yes; numerous fires from gunpowder and gun-cotton, and other substances which are inflammable. But I will give you some illustrations. The great fire at New York, on the 10th of December, 1853, took place originally from a lamp being brought near some camphene in a printer's warehouse; and the fire in the "Amazon," the famous ship that was burnt, is supposed by Prof. Graham to have resulted from turpentine being kept in a storehouse a little above the boiler; turpentine emitting a volatile vapour at 110 degrees. There was a great fire about 1849 of a large American steamer, where almost everybody perished, which arose from the explosion of a turpentine can that was placed near the funnel of the steam engine. These volatile oils expand at the rate of 1 in 30 in a temperature of 60 degrees; that is to say, between 40 degrees and blood-heat, and they are apt to break the cans when heated. There are such numerous cases of accidents from petroleum and burning oils below the standard, that I will only mention one or two of the large instances of fires. Take the case of the "Lotty Sleigh" at Liverpool, on the 15th of January, 1864; that was a gunpowder vessel, containing 11½ tons. The captain was trimming a lamp with bad oil; the flame communicated to the canister from which he was trimming the lamp and set the vessel on fire; the crew all fled from the ship, and it exploded.

The flame was communicated to the canister on account of the vapour issuing from the canister travelling to the lamp?—Yes. Then there was the celebrated burning of the cathedral in Santiago, where 2000 persons, principally women, perished; that resulted from some of the oil coming over the lamp on some drapery; and as that oil was self-ascendable at common temperatures, the fire ran up and communicated to the other lamps.

Can you give an instance to the Committee of any case where there was a great fire where vegetable oils and tallow were burnt?—The famous Tooley-street fire is a case of this kind. When they were thoroughly heated, large masses of tallow and oil floated down the river and set fire to the shipping, which showed that when they were thoroughly heated they would burn on the top of the water.

He had no doubt that rags that have been used in wiping petroleum lamps and then thrown aside are a fertile source of fires. He had even known instances in which useless butter rags from the casks have taken fire in 24 hours, by being put together in a heap. Saltpetre, nitrate of soda, chlorate of potash, manganese, and bichromate of potash, form his last class of fire promoters. The use of oil lamps has much increased in consequence of the extent of oil production having lowered the price. [MINERAL OILS.]

CHEMISTS AND DRUGGISTS.—By Letters Patent under the Great Seal granted by James I., A.D. 1616, all persons “brought up and skilful in the art, mystery, or faculty of Apothecaries, and exercising the same art, mystery, or faculty, then being Freemen of the mystery of Grocers of the City of Lond., or being Freemen of any other art, mystery, or faculty in the said City of Lond. (so as they had been brought up and were expert in the art and mystery of Apothecaries), and they and all such men of the said art and mystery of Apothecaries in the said City of Lond. and suburbs of the same, and within 7 miles of the said City, might and should be one body corporate,” under the title of “The master, wardens, and so. of the art and mystery of Apothecaries of the City of Lond.”—with certain powers therein appointed. In 1815, by the 55 Geo. III. c. 194, certain of these powers were repealed and amended; and new powers were granted, under which the master and wardens may as often as they see fit, in the daytime, enter the shop of any person using the said art or mystery in England and Wales, “and shall and may search, survey, prove, and determine if the medicines, simple or compound, wares, drugs, or any thing or things whatsoever therein contained, and belonging to the art or mystery of Apothecaries aforesaid, be wholesome, meet and fit for the cure, health and ease of His Majesty’s subjects; and all and every such medicines, wares, drugs, and all other things belonging to the aforesaid art, which they shall find, unlawful, deceitful, stale, unwholesome, corrupt, pernicious, or hurtful, shall and may burn or otherwise destroy;” and may impose penalties. [ADULTERATION.]

The *Pharmacy Act*, 1868—31 & 32 Vict. c. 121—enacts (sec. 11) that :

Every registrar of deaths in Gt. Brit., on receiving notice of the death of any pharmaceutical chemist, or chemist and druggist, shall forthwith transmit by post to the registrar under the Pharmacy Act a certificate under his own hand of such death, with the particulars of the time and place of death; and on the receipt of such certificate, the said registrar under the Pharmacy Act shall erase the name of such deceased pharmaceutical chemist or chemist and druggist from the register, and shall transmit to the said registrar of deaths the cost of such certificate and transmission, and may charge the cost thereof as an expense of his office.

CHESHIRE, EDWARD, for several years the Assistant Sec. of the Inst. of Actuaries, and of the Statistical So. In 1853 he pub., *Results of the Census of Gt. Brit. in 1851, with a Description of the Machinery and Process employed to obtain the Return*. A well-written and most instructive pamph.

CHESHYRE, JAMES W., Banker, Hertford, founded in 1848 the *County Hail Storm Ins. Co.*, a most successful institution. In 1849 he founded the *County Mutual L.*, of which he became and remained Man.-Director until its amalg. In 1865 he founded, in conjunction with the late Marquis of Salisbury, the *County Cattle Ins. Co.*

CHESHYRE, JOHN C., was Sec. of *County Cattle Ins. Co.* from its commencement in 1865, down to the date of its passing into liq.

CHEST (Thorax).—An old English term, commonly traced to Latin and Greek words of the same import. “When it is considered that the same word was anciently used for a *basket*, the appropriation of it to the human thorax will appear quite natural to any one who has ever seen a skeleton.”—*Forbes*.

CHEST DISEASES.—These will be spoken of under their proper heads, as **ASTHMA**, **LUNG DISEASE**, etc.; but more under **RESPIRATION**, **DISEASES OF**.

CHESTER, N., was Sec. of *Indemnity Marine* from 1844, or earlier, down to 1863.

CHESTER.—An ancient English city, known to the Romans as *Deva*. It is situate at the north-western extremity of the midland district. In 1471 it was nearly destroyed by fire. In 1862 its Exchange and Town Hall were burnt. Our attention is chiefly drawn to this city here, in consequence of Dr. Haygarth, M.D., having kept a regis. of mort. obs. in it for a period of years, 1772 to 1781 inclusive, from which Dr. Price afterwards constructed the **CHESTER T. OF MORT**.

In 1774 Dr. Haygarth made a survey of the city with great care. In the ten parishes of Chester, including the suburbs, there were found to be: 14,713 inhabitants. 3428 families. Males, 6697; females, 8016. Married, 4881; widowers, 258; widows, 736. Under 15, 4486; above 70, 625. Dead of the smallpox in 1774, 202; recovered the same year, 1183; ill with it in Jan., 1775, 19; not had it in Jan., 1775, 1060.

The following are the mean details shown by Dr. Haygarth’s regis. The regis. was kept on a plan which had been recommended by Dr. Price in his *Obs. on Reversionary Payments*:

Births in the 10 years 1772–81: males, 2192; females, 2115; marriages, 1500, or 150 annually.

Burials (as per following statement)	Males, 1939	Females 2151
Died between birth and one month	115	80
“ from 1 to 2 months	67	51
“ “ 2 to 3 “	38	30
Died from birth to 3 months	—220	—161

Died from birth to 3 months	Males, 220	Females, 161
" " 3 to 6 months	" 75	" 64
" " 6 to 9 "	" 76	" 69
" " 9 months to 1 year	" 67	" 74

Died from birth to one year	" 438	" 368
" 1 to 2 years	" 180	" 181
" 2 to 3 "	" 107	" 127
" 3 to 4 "	" 67	" 77
" 4 to 5 "	" 34	" 53
" 5 to 10 "	" 91	" 75
" 10 to 15 "	" 28	" 34
" 15 to 20 "	" 48	" 53

Died, "in all," under 20 years of age " 993 " 968
The higher ages are given in separate T. for males and females. We place them both under one T. as follows :

Ages.	MALES.				FEMALES.			
	Bachelors.	Husbands.	Widowers.	Totals.	Maids.	Wives.	Widows.	Totals.
20 to 25	50	8	0	58	38	13	2	53
25 to 30	30	31	1	62	28	49	3	80
30 to 35	19	29	1	49	21	40	4	65
35 to 40	16	38	5	59	7	58	6	71
40 to 45	12	53	6	71	11	54	9	74
45 to 50	9	61	7	77	14	46	16	76
50 to 55	11	54	14	79	16	34	21	71
55 to 60	10	49	13	72	13	32	24	69
60 to 65	13	63	29	105	26	53	37	116
65 to 70	7	40	17	64	9	28	46	83
70 to 75	10	49	40	99	19	37	86	142
75 to 80	3	29	27	59	18	20	70	108
80 to 81	1	9	8	18	3	3	29	35
81 to 82	2	1	6	9	1	0	12	13
82 to 83	0	4	5	9	1	2	15	18
83 to 84	0	1	2	3	1	0	10	11
84 to 85	1	2	2	5	4	6	15	25
85 to 86	0	4	1	5	2	0	8	10
86 to 87	0	3	5	8	1	0	8	9
87 to 88	0	1	2	3	1	0	6	7
88 to 89	0	2	2	4	0	2	6	8
89 to 90	0	0	2	2	0	0	6	6
90 to 91	0	2	2	4	0	0	3	3
91 to 92	0	0	1	1	1	0	4	5
92 to 93	0	2	0	2	Age } 95 } 96 } 97 } 98 } 99 } 101 } 102 } 103 }	0	2	2
93 to 94	0	0	1	1		0	1	1
94	0	1	1	2		0	1	1
97	0	0	1	1		1	0	1
99	0	0	1	1		1	3	4
106	1	0	1	2		0	1	1
					101	0	1	1
					102	0	1	1
					103	0	1	1
Above 20	195	536	203	934	235	479	456	1171
Under 20	...	...	...	993	...	...	...	968
				1927				2139

It will be observed that these last totals do not agree with the totals previously given. This is occasioned by the fact of the ages of 24 persons being unknown, and therefore they are not classed. The following add. explanation is also given by Dr. Price :

Of 22 females above the age of 80 who died at Chester in 1772, the Regis. specifies no more than 4 of them were maids, and 14 of them widows, who died between 80 and 90; and that the remaining 4 were widows who died above 90. Of the 4 who had never been married, 1 has been supposed to die at each of the ages 81, 83, 84, and 85. Of the 18 widows, 2 have been supposed to die at each of the ages between 80 and 88; 2 at 91; 1 at 92; and 1 at 93. It was proper to make some distribution of this kind; but it is of little consequence whether it is right or wrong. In every other instance the numbers dying at every age have been taken just as the Regis. has given them.

The number of widowers in the city in 1774 was 258 ; of widows, 736. During the 9 years 1772-79 the number of widowers who died was 157 ; of widows, 390.

CHESTER TABLE OF MORTALITY.—From the preceding facts recorded by Dr. Haygarth in his Regis., Dr. Price compiled the *Chester T. of Mort.*, which he first gave to the world in the 4th ed. of his *Reversionary Payments*, pub. 1783. The learned compiler, by way of preface, says :

Chester is a healthy town, of moderate size, where the births had for many years a little exceeded the burials ; and the Regis. to which I refer had the peculiar advantage of being under the direction of Dr. Haygarth, its founder as well as conductor. As it gives an accurate account of the distempers of which all the inhabitants die in every season, and at every age, it contains much physical instruction ; but my views led me only to take notice of that part of it which gives the law according to which human life wastes in all its different stages, both among males and females.

Here is the Table. The "Expectations" were not included in the orig., but were afterwards computed quinquennially for the purpose of showing the difference between male and female life :

MALES.				FEMALES.			MALES.				FEMALES.		
Age.	Living.	Dying.	Expectation.	Living.	Dying.	Expectation.	Age.	Living.	Dying.	Expectation.	Living.	Dying.	Expectation.
0	1927	220	28.13	2139	161	33.27	48	590	16		783	16	
3 mo.	—	75		—	64		49	574	16		767	15	
6 "	—	76		—	69		50	558	16	17.64	752	15	20.62
9 "	—	67		—	74		51	542	16		737	14	
1 yr.	1489	180		1771	181		52	526	16		723	14	
2 yrs.	1309	107		1580	127		53	510	16		709	14	
3	1202	67		1463	77		54	494	15		695	14	
4	1135	44		1386	53		55	479	14	15.14	681	13	17.52
5	1101	30	43.20	1333	30	47.44	56	465	14		668	13	
6	1071	24		1303	10		57	451	14		655	13	
7	1047	18		1285	11		58	437	14		642	15	
8	1029	11		1274	9		59	423	16		627	15	
9	1018	8		1265	7		60	407	19	12.36	612	20	14.20
10	1010	6	41.92	1258	6	45.17	61	388	22		592	25	
11	1004	5		1252	6		62	366	22		567	25	
12	999	5		1246	7		63	344	22		542	25	
13	994	6		1239	7		64	322	20		517	21	
14	988	6		1232	8		65	302	16	10.79	496	17	11.94
15	982	7	38.05	1224	9	41.36	66	286	13		479	15	
16	975	9		1215	10		67	273	11		464	15	
17	966	10		1205	11		68	262	11		449	16	
18	956	11		1194	12		69	251	13		433	20	
19	945	11		1182	11		70	238	16	8.05	413	25	8.81
20	934	11	34.86	1171	10	38.10	71	222	22		388	30	
21	923	11		1161	10		72	200	22		358	30	
22	912	12		1151	10		73	178	21		328	30	
23	900	12		1141	11		74	157	18		298	27	
24	888	12		1130	12		75	139	15	7.00	271	23	7.14
25	876	13	32.0	1118	16	34.78	76	124	12		248	22	
26	863	13		1102	16		77	112	11		226	21	
27	850	13		1086	16		78	101	11		205	21	
28	837	12		1070	16		79	90	10		184	21	
29	825	11		1054	16		80	80	10	5.43	163	21	5.20
30	814	10	29.25	1038	13	32.27	81	70	10		142	21	
31	804	9		1025	13		82	60	9		121	21	
32	795	10		1012	13		83	51	8		100	21	
33	785	10		999	13		84	43	7		79	18	
34	775	10		986	13		85	36	6	4.25	61	12	4.81
35	765	11	25.97	973	14	29.26	86	30	5		49	8	
36	754	11		959	14		87	25	4		41	6	
37	743	12		945	14		88	21	4		35	4	
38	731	12		931	14		89	17	3		31	4	
39	719	13		917	15		90	14	3	2.50	27	4	3.46
40	706	13	22.92	902	15	26.37	91	11	3		23	4	
41	693	14		887	15		92	8	3		19	4	
42	679	14		872	15		93	5	2		15	4	
43	665	15		857	14		94	3	2		11	4	
44	650	15		843	15		95	1	1		7	3	
45	635	15	20.20	828	15	23.50	96	—	—		4	3	
46	620	15		813	15		97	—	—		1	1	
47	605	15		798	15								

Dr. Price points out that in this, as in the preceding T. from Dr. Haygarth's regis., there are several irregularities in the decrease of the prob. of the duration of life, which would not have taken place had the obs. been made on a larger body of people or for a longer period of years; "but they do not much affect the correctness of the expectations and values of lives [annuities] deducible from these T., except at the extremity of life, after the age of 80 or 85." He continues:

According to the Chester Regis. the whole number of males that died at every age for 10 years between 80 and 85 was 44; 22 died between 85 and 90; and 14 above 90. This Regis. also makes 102 of the number of females that died between 80 and 85; and 34 and 27 the numbers that died between 85 and 90, and *above* 90. The preceding T., from the age of 80 to 97, is formed just as it would have been formed had the Regis. given only this information without particularizing the numbers dying in every single year of life after 80. It will be easily seen that this was necessary. *The deaths at the extreme ages beyond 96 or 97 bear so small a proportion to the rest that there is no occasion to include them in a Table of obs.; nor is it possible to do it properly.*

Dr. Price also says, "It should be further considered, that the remark at the end of the T. for Warrington is applicable to this T." This is inconveniently indefinite; for there are several remarks at the end of that T., of which perhaps the following are more specially referred to:

It appears from this T. and the Regis. on which it is grounded that, though the prob. of living among females are higher than among males, and a smaller number is born, yet more die. The reason must be that more males emigrate, and that many of them die in the army, the navy, and the militia. To this also it is owing that more *wives* die at Warrington than husbands.

It is proper to add that in consequence of this greater emigration, the preceding T. give the proportion of the expectations of life among *males* to those among females lower than it really is. But at the same time it should be remembered that it does this only for the ages *before* which and *during* which the emigration happens. After these ages (that is, prob. after the age of 40 or 50) the correctness of the T. cannot be affected by this cause.

Dr. Price, in the general intro. to his T., when he speaks of those for *Chester*, says, "Concerning these T. it is necessary I should make the following obs.":

The T. for females must be considered as particularly correct, because the numbers of females *born* and *buried* in Chester are very nearly equal. On the contrary, the number of males *born* being about an eighth greater than the number *buried*, it follows that, in the T. of Decrements for Males, the numbers of the living, and consequently the prob. of living at every age, for at least 10 or 15 of the first years of life, must be given too low.

The expectation of a female at birth is, according to these T., nearly 33½ years; and of a male 28½. The number of females therefore at Chester is to the number of males as 33½ to 28½, or in the proportion of 8000 to 6771, which is the proportion discovered by the survey in 1774, when the females in this city were found to be 8016 and the males 6697.

He proceeds to say that these T. are further confirmed by the proportion which they give of the numbers of males and females living under 15 to the whole number. This proportion was by the T. nearly that of 4486 to 14,888; and the *actual* numbers found by the enumeration in 1774 were 4486 and 14,713. In like manner the number of the living above 70 was, by the same survey, found to be 625; and the T. gave this number nearly the same. He proceeds:

The expectation at birth, taking males and females together, is at Chester by the T. near 31; and therefore 1 in 31 ought to die annually. But the quotient arising from dividing the number of inhabitants (14,713) by 409 (the medium of ann. burials from 1772 and 1781), will show that in reality no more than 1 in 36 die ann. The reason of this difference is, first, that the births exceed the burials, and that consequently a T. which takes the burials for its *radix*, must give the expectations of life too low. A second reason is the emigration of males from *Chester*, in consequence of which, though more males than females are born, and though males are also more short-lived, yet fewer die at *Chester*; many dying in the army, navy, militia, etc. The effect of the first of these causes will be particularly exemplified hereafter, in the case of the Kingdom of Sweden.

Dr. Price, when commending this Table to the notice of the members of the *Equitable* in 1779, said:

Chester is an old and very healthy town of moderate size, which has continued much the same as to populousness for a long course of years. These are circumstances which *render it a situation particularly fitted for showing the true law that governs the waste of human life in all its stages.* The regis. which has been estab. there is more minute and correct than any other; and it is the only one I am acquainted with that gives the difference between the chances of living among males and females, and from which it is possible to compute, with any degree of precision, the values of lives before 5 and after 70 years of age. [FEMALE LIFE.]

Mr. Wm. Morgan made the following remarkable statement concerning this Table, before the Parl. Committee on F. Societies in 1827:

Chester is the best town for making observations, for it is a town where the inhabitants at the time Dr. Price formed his T. neither decreased nor increased much. . . . And that being the case when we computed the T. in our office [the *Equitable*], both Dr. Price and myself had a doubt whether the CHESTER or the NORTHAMPTON should be adopted. Dr. Price was for the Chester as being stationary with regard to the number of its inhabitants, and therefore as affording the best data. I beg leave to observe that the Chester T. gives the values of lives a little higher than the Northampton T.

Thus how near we were of altogether escaping the great controversies to which the Northampton Table has given rise! [NORTHAMPTON T.]

• CHETWYND'S [LORD] INS. FOR SHIPS AND BOTTOMRY.—A project under this title was set on foot in 1719, for carrying on Marine Ins. Application was made to Parl. for powers, and refused. The scheme was at one time called *Ram's* Ins. It afterwards merged into the London Assu. Corp. [MARINE INS., HIST. OF.]

CHETWYND, MR., Assistant Sec. of the General Post Office, Lond. He was joint editor and proprietor of the *Insurance Gazette*, first founded 1856. In 1866 he became sole proprietor of that paper, on the retirement of his co-proprietor, Mr. H. R. Sharman.

Mr. Chetwynd is believed to be the chief moving spirit in connexion with the Government scheme of Life Assu. and Annu. ; and he will find great scope for his exertions in making that scheme popular.

CHEVANTIA [from the French, *Chevance*].—A loan or advance of money upon credit ; also goods, stock, etc.

CHEVISANCE [or **CHIEVANCE**].—Usury. An indirect gain in point of usury. Also an unlawful bargain or contract.

CHICAGO.—A mercantile city situate at the south-western extremity of Lake Michigan, U.S. Some 50 years ago it consisted prob. of several log huts. On the 7th Oct., 1871, it claimed to be fourth in point of pop. and wealth in the U.S. ; its inhabitants being estimated at 350,000. [At the census of 1870 its pop. was returned at 298,000, which placed it fifth in the order of cities.] On that day a fire of serious magnitude occurred ; to be followed by one on the following day, which will ever be spoken of as *the* Chicago conflagration. By the 9th Oct., 1871, all the principal bus. portion of the city was in ruins. The fire destroyed about 12,000 buildings, covering nearly 5 square miles ; the pecuniary loss being about £33,000,000 ! Hence this may be regarded as the largest fire the world has yet seen.

We draw the following add. details from the report of the Ins. Auditor of the State of Illinois, pub. 1872 :

Total amount at risk [insured] in burnt district...	£20,045,000
Amount adjusted and in course of adjustment ...	£19,274,702
Total amount resisted ...	36,041
Total amount of losses claimed...	£19,310,743

Of this amount there had been paid £7,599,797 ; the salvage and discount amounted to £1,034,752 ; leaving then unpaid £10,676,195 ; a good deal of which the offices would be unable to pay in full. The average paid on the amount claimed was 39·36 p.c., and it was believed there would be 12·54 p.c. further paid, making a total of 51·90 p.c. There were 170 American cos. upon which claims were made, and but 6 Brit. cos. The American offices sustaining the greatest loss were the following : *Chicago Firemen's*, £1,321,437 (not expected to pay more than 5 p.c. of that amount) ; *Merchants*, of Chicago, £1,000,000 (expected to pay from 8 to 12 p.c.) ; *Ætna*, of Hartford, £820,000 ; *Germania*, of Chicago, £660,000 (will pay from 3 to 8 p.c.) ; *Home*, £614,278 (*has paid in full*) ; *Hartford*, £440,000 ; *Equitable*, of Chicago, £400,000 (will pay about 2 p.c.) ; *Anaes*, £206,445. Most of the smaller U.S. offices interested in this fire have passed into liq.

The following is the position of the Brit. offices :

	Total Loss.	Paid.	Salvage and Discount.	Unpaid.
<i>Liverpool, Lond., and Globe</i> ...	£699,790	£654,136	£45,634	£4000
<i>N. Brit. and Mercantile</i> ...	494,407	455,730	28,723	9945
<i>Imperial</i> ...	45,600	41,618	2082	1900
<i>Royal</i> ...	19,600	19,378	221	—
<i>Commercial Union</i> ...	13,018	11,000	—	—
<i>Britannia</i> ...	9559	9559	—	—

These amounts will be varied in relation to the offices themselves by re-insurance ; and from that cause also other British cos., of which the State Auditor has no cognizance, suffered more or less severely by the conflagration. [AMERICA, BRIT. OFFICES TRADING IN.] The promptness with which the Brit. offices discharged their losses in this case has placed them in high estimation in the U.S. Several other Brit. offices have since commenced bus. there, viz. the *Guardian*, *Lancashire*, *Lond. Assu. Corp.*, and the *Universal*. The larger offices have revised their risks to a considerable extent. The city is again [9th Oct., 1872], rebuilt more grandly than before. [On the day just named a fire broke out at Boston, U.S., of a most extensive and alarming character—second only in importance to this of Chicago. Most of the above-named offices and others lose heavily.]

CHICHESTER.—It is recorded by William of Malmsbury, that this city lost 34,000 inhabitants from an epidemical disease which broke out A.D. 772.

CHICKEN-POX (Class, *ZYMOTIC* ; Order, *Miasmatic*).—Every year a certain number of deaths arise from this disease. In 1867 there were 46, viz. 22 males, 24 females. Nearly all the deaths occur within five years of birth : the greater number within one year.

CHIENE, GEORGE TODD, Man. of *National Guarantee and Suretyship* since 1871. Was previously in practice as a Chartered Accountant.

CHILD, SIR JOSIAH, Banker and Political Economist, published in 1668 a *Discourse concerning Trade*. The tract was written in 1665 : and when pub. in 1668 did not bear the author's name, but only his initials "J. C." He advocated a reduction of the legal rate of int. to 4 or even 3 p.c. instead of 6, as it then stood. He also advanced arguments for erecting a *Court of Merchants* for determining controversies relating to maritime affairs. About the same date he appears to have issued another tract, *Trade and Interest of Money considered*. These were probably blended into one in the later eds. of his *Discourse about*

Trade, pub. 1670, 1690, and 1693. In an ed. we have, dated 1690, are the words on the title-page, "never before printed;" and it contains, by way of appendix, *A Small Treatise against Usury*, written by Sir Thomas Culpepper the elder, but not so stated there. His (Child's) works were long held in high esteem, and even now retain a great reputation.—*Hodge*, 1860. [MARINE INS.] [USURY.]

CHILDBEARING.—It is generally conceded that in the climate of Gt. Brit. no female under the age of 13, nor above that of 50, can conceive—provided in the latter case that she have been previously barren. This, however, is only regarded as a general rule, subject to exceptions. The question at what age pregnancy is possible, and when it ceases to be possible, has been much canvassed. As to premature pregnancy in European countries, the most astonishing instance is given by Meyer, of a Swiss girl becoming a mother at 9 years of age. The English law admits of no presumption as to the time when a woman ceases to bear children, though this enters into most other codes.—*Wharton*, *Beck*, etc.

CHILDBED FEVER.—Puerperal fever, originating in the peritoneum, and often called *peritoneal fever*. [PUERPERAL FEVER.]

CHILDBIRTH, DEATHS FROM (Class, DEVELOPMENTAL; Order, *Developmental Diseases of Adults*).—The following T. shows the deaths in England of women in Childbirth—including *Metria*—during the 21 years 1847–67. It also shows the numbers resulting from metria, as also those resulting from the accidents of Childbirth. The fluctuations are somewhat considerable, but on the whole there is a tendency to diminution.

DEATHS IN ENGLAND OF WOMEN IN CHILDBIRTH IN EACH OF THE YEARS 1847–67:

Years.	NUMBER OF DEATHS FROM			Deaths of Mothers to 10,000 Children Born Alive.
	Metria and Childbirth.	Metria.	Accidents of Childbirth.	
1847	3226	784	2442	60
1848	3445	1365	2080	61
1849	3339	1165	2174	58
1850	3252	1113	2139	55
1851	3290	1009	2281	53
1852	3247	972	2275	52
1853	3063	795	2268	50
1854	3009	954	2055	47
1855	2979	1079	1900	47
1856	2888	1067	1821	44
1857	2787	836	1951	42
1858	3131	1068	2063	48
1859	3496	1238	2258	51
1860	3173	987	2186	46
1861	2995	886	2109	43
1862	3077	940	2137	43
1863	3588	1155	2433	49
1864	4016	1484	2532	54
1865	3823	1333	2490	51
1866	3682	1197	2485	49
1867	3412	1066	2346	44
21 years 1847–67	68,918	22,493	46,425	50

See also CHILDBIRTH, RISKS OF. [PUERPERAL FEVER.]

CHILDBIRTH INSURANCE.—In 1711, after Parl. had endeavoured to suppress the Birth and Marriage Ins. schemes which then prevailed in vast numbers, the projectors hit upon the method of ins. against the dangers of Childbirth—prob. because it appeared to evade the provisions of the Act. Upon what data, if any, the calculation or estimate of risk was based does not appear: nor is it at all clear what the precise nature of the risk undertaken, and the benefits resulting, were. Obscurity was one of the features of the ins. projects of that speculative period. We present such data as we find.

The *Profitable and Most Equitable* office, at the Golden Candlestick, in Newgate St., which had been founded in 1710 at another address, for the ins. of marriages, births, etc., announced on the 5th April, 1711, that books were "open'd and subs. taken on single lives, and safety of women in childbed, where several persons have received great advantages at an inconsiderable charge." The term "single lives" referred to NON-MARRIAGE INS., of which we shall have to speak under that head.

On the 5th April, 1711, notice was issued from an ins. office next door to Pool's Coffee House, Without Bishopsgate, of "a new and advantageous method settled upon lives and safety of women in childbed, to the great benefit of their families . . . , where proposals may be seen, and the money returned at the month's end if satisfaction is not given."

The next announcement was on 10th April, as follows: "*The Beneficial Adventure upon the Lives of Childbed Women*, at Pratt's Coffee House, in Cateaton St., between St. Lawrence Church and the corner of Aldermanbury, this day, being the 10th April (1711), will be opened four books of ins. upon the lives of childbed women; wherein any person may become a subs. for the expense of 2s. *The women are to live 40 days before, and 20 days after delivery.*" This last feature sadly requires elucidation.

Nearly all L. ins. offices have undertaken the risk of childbirth in connexion with L. ins., charging mostly an extra prem. at least for the first child. We do not find that the *Amicable* made any add. charge for female lives; the *Equitable*, at starting, did so, but appears to have abandoned the practice. The subject will be fully considered in our art. on FEMALE LIVES; and we shall in the present art., therefore, only now speak of offices which have made a special feature of ins. against the risks of childbirth.

The *Asylum L.*, founded 1824, made a special exception in favour of pregnant females, which we have already noted in our hist. of that co.

The *British Nation*, founded 1854, had a scheme of "Pregnancy or Childbirth Ins." which it presented to the world in the following elaborate phraseology:

It is also proposed by the estab. of this asso. to originate a new source of bus., by affording to females an opportunity of assu. themselves through the dangers of that crisis that nature has destined them to endure, and which creates in them so much solicitude. During that interesting epoch of female life—*Pregnancy*—which gives rise to so many fears and anxieties, they will be readily admitted, without medical examination, to the resources and comfort of L. assu.; and thus one cause of alarm will be assuaged by the reflection that should the mother be removed, the child or children she leaves behind will be provided for. In the event of the mother dying in childbirth, or within nine days after (or upon the 9th day), this Asso. will grant to the child, if surviving, an annu. until the age of 21, in proportion to the amount which may be assured; or according to any arrangement that may previously be entered into.

The special rates of prem. were not stated; but the advantage was extended to all ladies ins. in the office for the whole term of life without extra prem.

CHILDBIRTH, RISK OF.—The question of the risk to mothers of Childbearing has, very naturally, occupied from time to time considerable attention. Some writers have been of opinion that child-bearing women are not only liable to all diseases incident to other women, and this plus the peculiar dangers of childbearing. But the majority are of opinion not simply that the pregnant state renders the constitution less susceptible of receiving or developing various diseases; but that, speaking generally, pregnancy more frequently befalls healthy than unhealthy women; and that it may therefore be regarded *prima facie* as a proof of health. That pregnant women appear to have the power of warding off the ravages of disease has frequently been the subject of remark in relation to *Consumption*; but we do not propose to follow the medical so much as the statistical aspect of the case.

Graunt remarked upon this subject in 1661, in his *Obs. on the Bills of Mort.*:

In regular times, when accounts were well kept, we find that not above 3 in 200 died in childbed, and that the number of abortives was about treble to that of the women dying in childbed; from whence we may probably collect that not one woman of an hundred (I may say of 200) dies in her labour; forasmuch as there be other causes of a woman's dying within the month, than the hardness of her labour. If this be true in these countries, where women hinder the facility of their childbearing by affected straitenings of their bodies; then certainly in America, where the same is not practised, nature is little more to be taxed as to women, than in brutes; among which not one in some thousands do die of their deliveries. What I have heard of the Irish women confirms me herein.

The early statistics gathered from the British Lying-in Hospital furnish the following results. Between the years 1750 and 1762 the deaths of mothers were 1 in 38; between the years 1788 and 1800, 1 in 318. These figures show a reduction of mort. in an inst. which must have commanded the best medical skill, and best nursing, of the whole period under review, of more than five-fold for children, and more that eight-fold for their mothers. "In this reduction, sanitary improvements in space, ventilation, and cleanliness must have borne a very considerable part."—*Dr. Guy*.

Some wider obs. were taken early in the present century. Thus in the whole kingdom of Prussia, in 1817, the deaths in childbirth were 1 in 112. In the Dublin Hospital, in 1822, there were 12 deaths among 2675 women delivered, or 1 in 223. In the Edinburgh Hospital, about the same period, the deaths were found to be 1 in 100. At the City of Lond. Lying-in Hospital, in 1826, the deaths were 1 in 70; at Strasburg, about the same date, the deaths were 1 in 109. The deaths in childbirth shown by the Lond. bills during the 10 years 1818 to 1827 gave the proportion of deaths as 1 in 117—making the extra prem. for ins. about 17s. p.c.

In 1829 Mr. Geo. Farren pub. *Obs. on the Laws of Mort. and Disease*; and therein he remarked on the comparative danger of the first and subsequent childbirths, as follows:

The mort. in first labours, selected from the general mort. by childbirth, will appear to be in the proportion of 14 to 100, and there is no reason to doubt that first labour is attended with greater danger than the 2nd, 3rd, 4th, 5th, 6th among young women; but that after several labours the *immediate consequences* of childbirth are still more dangerous to life than the act of a first labour; and that every subsequent birth is attended with increased risk.

Where a first pregnancy takes place in the middle of life, the same consequences which frequently follow the birth of a ninth or tenth child by a young woman, may be expected at a fourth or fifth labour of a woman of more advanced age.

These remarks are intended to apply strictly to the dangers of childbirth, and its immediate con-

sequences, distinguished from the state of *pregnancy*, with respect to which a very slight prognosis may be formed.

The following Table furnishes the statistics of childbearing in *Sweden* during the 5 years 1831-5 :

Age.	Women living at Two Enumerations 1830 & 1835.	Childbearings in Five Years 1831-35.	Proportional Numbers.	
			Of 100 Women living the Numbers bearing Children annually.	Women living to One Annual Childbearing.
1	2	3	4	5
15-25	515,257	79,225	6.15	16.26
25-35	428,718	248,589	23.19	4.31
35-45	383,771	148,610	15.49	6.46
45-55	298,047	7,189	.96	103.65
15-55	1,625,793	483,613	11.90	8.40

The figures in the 4th col. are derived by multiplying the number of childbearings in the 5 years 1831-5 (col. 3) by 100, and then dividing by $2\frac{1}{2}$ times the women living at the two enumerations 1830 and 1835 (col. 2).

Dr. Southwood Smith, in his famous work, *The Philosophy of Health*, published 1836-7, said (respecting some of the statistics already given by us) :

The change that has taken place in the condition of lying-in women during the last century in all nations of Europe cannot be contemplated without astonishment. The mort. of lying-in women in France, at the Hotel Dieu of Paris in 1780, is stated to have been one in 15. In 1817 for the whole kingdom of Prussia, including all ranks, it was 1 in 112. In England in the year 1750, at the British Lying-in Hospital of Lond., it was 1 in 42; in 1780 it diminished to 1 in 60; in the years between 1789 and 1798 it further decreased to 1 in 288; in 1822, at the Lying-in Hospital in Dublin, it was no more than 1 in 223; while during the last 15 years at Lewes, a healthy provincial town, out of 2410 cases there have been only *two deaths*, that is, one in 1205. There is no reason to suppose that the mort. in the state of parturition is less at Lewes than in other equally healthy country town in England.

The learned writer's view in this last respect was too sanguine.

It was only when the Gen. Registration Act of 1836 had got into proper working that we began to have trustworthy national statistics on this and many other equally important subjects. In the year 1838 the deaths from childbirth in England and Wales numbered 2811; in 1839, 2915; in 1840, 2989; in 1841, 3007—being in this last year an average death of 8 mothers for every day in the year. In the 4 years the deaths were 11,722; and the mort. was 1 death to 171 births regis.

Dr. Farr, reviewing these statistics in an able paper in the 5th R. of Reg.-Gen., pub. 1843, admitted that they were even then "less specific than could be desired." He says:

Midwifery is as well understood in England, and the medical practice is certainly as sound, as little encumbered with obsolete prejudices, as well adapted to aid and correct the efforts of nature, as the other parts of surgery; but errors in practice are sometimes committed; and though excellent nurses—considering their education—are sometimes met with, medical precepts are too often set at naught by the nurses and old women in attendance, who have peculiar views of their own, which they lose no opportunity of announcing and carrying into effect, with the best intentions in the world, but the worst consequences. A large proportion of the 500,000 English women who lie-in every year, and have any attendance at all, are attended by midwives, who, from one cause or another, prob. delicacy of the national manners in points of this kind, receive no regular preliminary instruction in anatomy and other matters, some knowledge of which a glance at the causes of death in childbirth will show is indispensable in many emergencies. It is true that a medical man can be called in where danger is imminent; but to discover danger a knowledge of its sources is required; and those who have come in contact with midwives or "monthly nurses" are well aware that ignorance does not diminish their self-confidence.

He proceeds to note that in France the "sages-femmes" go through a regular course of instruction, theoretical and practical. Madame Boivin and others had greatly distinguished themselves there by their writings, and contributed not a little to the progress of their art. Mr. Hoffman stated that the Prussian Gov. supported, in each of the eight provinces, schools of midwifery, which in 1837 had furnished the country with 11,155 midwives, examined and passed by the Medical Boards. Among the Hebrews and the Egyptians we believe midwifery was practised by women only.

Dr. Farr proceeds:

It would be folly—with the undoubted differences in our manners and institutions—to argue that the French or Prussian systems should be introduced into this country; practically they are perhaps not more efficient than our own; but it is very well worth while, in the first place, to inquire whether our English system does not admit of essential improvements, and in the second, what steps should be taken for carrying these improvements into effect.

No one who has reflected upon the subject, and certainly no one who has a practical acquaintance with it, will contend that the ann. deaths of 3000 women in childbirth, and of 13,350 boys, and 9740 girls in the first month after delivery, or the sufferings and deformity of many who escape with life, are natural and inevitable. Admit that the lives of 1000—of 500—or of 100 of these mothers might be saved—and that many more might be rescued from injuries and pains which disable, or never leave them, and assuredly no apathy, no false sentiments of delicacy, will prevent those who have the public health at heart from giving the subject the most attentive consideration.

He proceeds to speak of the almost national advantages which would flow from schools of trained nurses.

In a paper by Mr. Samuel Brown, contributed to the *Assu. Mag.* in 1853 [vol. iii. p. 17], *On the Influence of the Ages of the Parents at the Time of Marriage on the Sex of Children, and on the Prolificness of Marriages*, there is the following :

The average period of childbearing is not more than 30 years, and may, for the sake of limiting the term of inquiry, from the date of marriage, be taken to terminate with the age 45 on the side of the female. On the side of the male the period may extend for 20 years longer, which accounts for the fact of there being more second marriages of males than of females. It is a wise provision of nature that in countries where the period of female prolificness commences at an earlier age, it terminates much earlier in proportion, or the constitution of the mother might be exhausted, and the children of later life be born only to die of debility and disease.

In the 13th Report of Reg.-Gen., pub. 1854, Dr. Farr returns to the subject, "The great loss of women in the prime of life is the result of negligence and ignorance in many cases, and would be diminished by the education of the nurses and midwives who attend the poor."

From the Swedish returns (1776-1855), it appears that 100 childbearings produced 101.62 children, viz. 2.82 stillborn, 98.80 quickborn; consequently 100 quickborn children imply 101.21 childbearings. In the year 1852 in England 624,012 children were born alive by 617,902 mothers; of whom 6036 bore twins, 37 bore triplets. So 99 mothers bore 100 live children; or 100 live children implied 99 childbearings. To these should be added the childbearings yielding still-births unregistered.—*Dr. Farr.*

Dr. Farr said in the 17th Report of Reg.-Gen., pub. 1856, It may be probably assumed that the child-bearing women of a pop. are, in the language of ins. offices, "select lives,"—at least, select in a certain sense; but it can only be determined by further researches whether they are less or more liable than other women to be attacked or to die by the diseases not incident to childbirth. It is only well known that when they are attacked by zymotic diseases, such as cholera and smallpox, they succumb in unusually high proportions.

In the 20th Report, pub. 1859, the learned Doctor says, "The happy decrease of the danger of childbearing continues; 42 mothers died to every 10,000 children born alive in 1857; in 1847 the proportion was 60; in 1848 it was 61; and since that date the mort. has regularly declined year by year, leaving the average loss in the ten years, 51 mothers to every 10,000 children born alive."

In the *Medico-Chirurgical Trans.*, 1864, Dr. Brodie, of Queen Charlotte's Hospital, Lond., gave some valuable statistics regarding deaths from childbirth in various Lond. institutions. He found that in Queen Charlotte's Hospital, while the deaths of married women were only 18 p. 1000, the deaths of single women were 35 p. 1000—or nearly double. He says, "A great mort. among unmarried women on their passage through the puerperal stage has always existed." He considers the depressing circumstances necessarily incident to their unfortunate condition furnishes a solution. Speaking of the out-patients of St. George's Hospital, he says, "Women delivered at their own habitations, as I know by experience, are often living in the greatest filth and poverty, with only one room to accommodate the wants of a whole family; and yet, as will be seen, those patients do infinitely better than those who are removed to a spacious, well-ventilated building, with every comfort and attention that can be desired." This is certainly a very startling statement, and it was at one time believed that the only solution of it was that the worst cases went to the Hospitals. That theory has since been dispelled.

Soon after his accession to office (1866), Mr. Gathorne Hardy, President of the Poor Law Board, moved for a return of the number and mort. of child-bearing women in the metropolitan workhouses. It appeared there were 39 workhouses in the metropolis, that during the year 1865 the number of cases of childbirth was 2728, and that the deaths from that cause amounted to 16 in the same year. These deaths occurred in nine workhouses only. The facts may be summarily expressed by naming only those places which experienced any mort. Thus :

	No. of Cases of Childbirth.	No. of Deaths therefrom.
Thirty Workhouses...	1754	Nil.
St. Martin-in-the-Fields...	27	1
St. Marylebone	306	2
Hampstead	5	1
St. Pancras	249	3
Islington	91	5
East London	41	1
West London	52	1
Whitechapel	107	1
St. George's, Southwark...	96	1

Taking the aggregate number of both series, we find that the death-rate in childbirth for all the metropolitan workhouses was 6 p. 1000 cases. Is this a small or a large ratio? To discover the means of a very exact comparison—so exact that all the conditions of the problem shall be rigidly alike—is difficult, and in Lond. perhaps impossible. Some test, however, is supplied by the experience of one or two of the larger lying-in hospitals. Dr. Brodie, in the work already mentioned, gave the mortuary statistics of Queen

Charlotte's Hospital, and of several kindred establishments. From it the following figures are drawn :

	Years of Experience.	Cases of Childbirth.	Deaths in Childbirth.	Death-rate p. 1000 Cases of Childbirth.
Queen Charlotte's Hospital, 1857 to 1863	7	2268	90	40
Rotundo Hospital, Dublin, 1857 to 1861	5	6521	169	26
British Lying-in Hospital, 1849 to 1861	13	1581	11	7
The 39 Workhouses of London in 1865	1	2728	16	6
Outdoor Midwifery Department, St. George's Hospital, 1856 to 1863 ...	8	2800	10	35

Of the four in-door establishments named, the London workhouses exhibit the lower death-rate. It is only when we reach the out-door cases of St. George's Hospital that we discover a death-rate yet lower. The heavy mort. of Queen Charlotte's Hospital Dr. Brodie assigns to very special causes. Foremost is the great number of single women received there, the mort. of the unmarried being far beyond that of the married women in childbirth, as already stated. At the Rotundo Hospital, where the death-rate is fully four times that of the Lond. workhouses, the authorities "profess only to admit married women." The British Hospital approximates closely to the Lond. workhouses by its low death-rate. This institution restricts its benefits to married women, and to "these in not larger numbers than about 120 annually." The eight years' practice of the out-door midwifery department of St. George's reveals a death-rate exactly one-half that assigned to the British Hospital, and rather more than half that which occurred in the workhouses. The death-rate in Queen Charlotte's Hospital was more than *sixfold* that deduced from the workhouse data of 1865. The subject clearly requires further investigation.

Statistics collected for the French Government, and pub. by Dr. Le Fort, of Paris, in 1867, give the following results. Among 888,312 women confined in the principal lying-in hospitals of Europe, including those of Gt. Brit. and Ireland, France, Denmark, Russia, etc., and 934,781 cases, collected from the same cities and medical schools, of poor women confined in their homes as out and dispensary patients, the proportions of deaths were as follows: Of the 888,312 hospital patients, 30,394 died; while out of the 934,781 external or home patients, 4405 died. The result is most startling. For out of all the women delivered in hospitals, 1 in 29 died; whilst of all those delivered at their own impoverished and often wretched homes, only 1 in 212 died. This is not to be accounted for by the worst cases only going to the hospitals. It is believed to be the result of the crowding and sympathetic and contagious influences. See Sir James Simpson's *Address on Public Health*, Social Science Congress, 1867.

In the 30th R. of Reg.-Gen., pub. 1869, Dr. Farr returns to the subject, having before him statistics much more complete than any previously available. Hence we learn that in England the mort. by childbirth to every 10,000 *women living*, in the four decennials of age from 15 to 55, was 3.96, 8.96, 8.66, and 0.65 in the period from 1855-67; in the preceding period it was higher at all ages. The excess in the middle age 25-35 is due to the great proportion of married child-bearing women at that age, and to the number of pregnancies then occurring. The excess of violent deaths among males of 15 and under 35 does not raise the mort. from all causes to the same pitch as the mort. of females. At the age 25-35 the deaths to 10,000 living men are 95.5, while the mort. of women at the corresponding age is 98.7; the excess is 3.2, with which the mort. by childbearing, 8.96, may be compared.

The mort. by childbirth is much less under the age of 35 in the healthy districts than it is in Lond. and the large towns; but after 35 the women in the country die by childbearing in larger numbers than the women in the towns. In towns they are more exposed to puerperal fever; in the country many, probably, perish for want of skilful help. During the ten years 1851-60, to 10,000 births in the Eastern Division (Essex, Suffolk, Norfolk), 41 mothers died in childbirth; in Lond. 49; in Lancashire and Cheshire 54; in Wales and Monmouthshire 61. In the healthy districts the mort. in childbearing was 43, in the large towns 49. Nothing in England approaches the fatality to mothers in Wales, where they must be greatly mismanaged.

In the English and Welsh healthy districts the mort. at the ages 15-45 of women is higher than the mort. of men from all causes: thus, of 1000 living at the age 25-35, the men die at the rate of 8.18, the women at the rate of 8.94; the excess on women is 0.76; and the excess is nearly the same through the whole of the procreant part of life. The humane Doctor, impressed by these facts, asks:

How can the dangers of childbearing, which have been traced to various causes, be alleviated? This question was asked many years ago, and was answered by the establishment of lying-in hospitals. Many of the mothers are poor married women; and some of them unmarried, abandoned, inexperienced, repudiated by society, incur double dangers. What seemed more likely to save these women in travail from peril than the maternity? Unfortunately, experience has proved that the assemblage of child-bearing women under one roof gives rise to fatal epidemics of childbirth fever; and the mortality is almost invariably in excess of the mortality in detached dwellings. No help is to be expected from maternities. There is hope, however, to see the mortality sensibly reduced by the progress of midwifery.

He adds :

The utmost care on the part of medical men who practise as accoucheurs is indispensable. That puerperal fever has been transmitted from patient to patient is deplorably true. No precautions can be too great. Then the contagion of scarlatina evidently in some cases lights up a puerperal disease, which has not yet been distinguished from puerperal fever. So does erysipelas, and so do perhaps other diseases. The dangers of a general hospital to puerperal women have been revealed by recent experience. Students cannot study in the dissecting room and at the same time practise midwifery without risk. Nurses are often mediums of disease.

Dr. Farr supplies (*inter alia*) the following Tables. The first shows the mort. among the women of England of the child-bearing age ; the next that of mothers in childbearing.

Mortality of Women by Childbearing at different Ages in England, in the 7 Years 1848-54, and in the 13 Years 1855-67 :—

Ages of Women.	Female Population at the Middle of the Years		ANNUAL RATE OF MORTALITY.						Ages of Women.
			To every 1000 Women living, the Number of Deaths by						
			Childbirth & Metria.	Child- birth.	Metria.	Childbirth & Metria.	Child- birth.	Metria.	
	1851.	1861.	7 Years 1848-54.			13 Years 1855-67.			
15—25	1,746,854	1,893,742	·411	·240	·171	·396	·233	·163	15—25
25—35	1,417,298	1,588,756	·986	·643	·343	·896	·575	·321	25—35
35—45	1,072,611	1,245,887	·981	·742	·239	·866	·648	·218	35—45
45—55	782,010	893,779	·085	·069	·016	·065	·052	·013	45—55
15—55	5,018,773	5,622,164	·645	·435	·210	·589	·393	·196	15—55

Mortality of Mothers by Childbearing at different Ages in England, in the 7 Years 1848-54, and in the 13 Years 1855-67.

Age of Mother.	Annual Rate of Mortality.						Age of Mother.
	To every 1000 Mothers bearing Children, the Number of Deaths by						
	Child- birth.	Metria.	Childbirth & Metria.	Childbirth & Metria.	Child- birth.	Metria.	
	7 Years 1848-54.			13 Years 1855-67.			
15—25	3·91	2·77	6·68	6·44	3·78	2·66	15—25
25—35	2·77	1·48	4·25	3·86	2·48	1·38	25—35
35—45	4·79	1·54	6·33	5·59	4·18	1·41	35—45
45—55	7·20	1·63	8·83	6·78	5·39	1·39	45—55
15—55	3·58	1·73	5·31	4·83	3·22	1·61	15—55

In 1870 Dr. J. Matthews Duncan, M.D., pub. a work on the *Mort. of Childbed and Maternity Hospitals*. One of the objects of the work was to refute the statement made by the French writer Le Fort, already quoted in this art., as to the proportions of child-bed women dying in hospitals as against those dying at their own homes. Dr. Duncan pronounces this to be “a terribly erroneous statement.” Dr. Farr [33rd R. of Reg.-Gen. p. 407] inclines to support Le Fort. Even Dr. Duncan goes so far as to say, “I dare say an hospital could be so constructed and managed as to kill all the inmates.” He argues, however, that exceptional cases should be set aside, and that only well-conditioned maternities should be selected for argument. But he frankly adds, “It is well known that the best maternities are susceptible of vast improvements.” Dr. Duncan draws a proper distinction between deaths *in* childbirth and deaths *of* childbirth. “Deaths *in* childbirth,” he says, “are all deaths, from whatever cause, occurring within the four childbed weeks, including the period of labour.” Dr. Farr admits the necessity of this distinction, and says it is adopted in the Regis. abstracts.

Dr. Duncan had a careful search made in the Scotch regis. of deaths in Edin. and Glasgow, and found that 153 mothers died out of 16,393, within six weeks after delivery; or 1 in 107. He also deduced from certain returns of private practice a rate of mort. among mothers not very different from this. From all his inquiries he draws the inference that “no fewer than 1 in every 120 women delivered at or near the full time die within the four weeks of childbed.” Dr. Farr considers that estimate too unfavourable. He analyses the data upon which it is founded, and adheres to the national returns, as shown in the reports of the Reg.-Gen. (See 1872.)

Dr. Duncan, in his work on *Fecundity, Fertility, Sterility*, etc., states that after a woman has borne 9 children, the pregnancies often follow each other in rapid succession; and that the danger increases. Advancing age is itself one of the dangers.

At present the mort. is greater among women whose lives are insured at the child-bearing age than it is among men. And the prem. for the ins. of a pregnant woman is generally higher than the common tabular rates. The previous data show that the general risk of a first delivery in England is covered by a prem. of 16s. on £100, and of subsequent deliveries by a prem. of 8s.; the prem. of 10s. for each of 200 deliveries taken indiscriminately covers the common risks.—*Farr*.

In the 33rd R. of Reg.-Gen. pub. 1872, Dr. Farr again reverts to this subject, but appears to treat it more hopefully than in any of his previous papers. Childbirth is (he says) a physiological process, and under favourable conditions, where the mother has previously been taken proper care of, is attended with little danger. Unfortunately English mothers do not escape scatheless; nor can this be expected under existing circumstances. But there is evidence of improvement. In the four years 1847-50 no less than 59 mothers died to every 10,000 children born alive; in the four years 1867-70 the deaths had sunk to 45. He adds:

The error of collecting poor lying-in women into hospitals has been discovered, and to some extent discouraged; medical men have adopted wiser measures; they have taken greater precautions against infection; and midwives have been better taught. Still there is great room for improvement.

He then proceeds to review the statements and conclusions in Dr. Duncan's work, which we have already noticed under date 1870. He says in reference to the distinction of Dr. Duncan's *in* and *of* childbirth:

Pregnant women are subject to diseases like other women; they may be killed by accidents, and may be attacked by smallpox and scarlet fever, which in them almost invariably prove fatal. Women suffering from phthisis or heart disease, or other chronic diseases, bear children, and in the abstracts [of Reg.-Gen.] the deaths are referred to these fatal causes, to which, rather than to incidental childbirth, their deaths are attributable. Thus in add. to 3875 deaths from puerperal fever and the various accidents of childbirth [in 1870], 719 women died soon after childbirth—231 of smallpox or some other zymotic diseases; 138 of phthisis; 101 of heart disease; 41 women, who were returned as pregnant, prob. in the early stages also died of various diseases.

He says Dr. Le Fort's T. of the death-rate of women delivered at home, viz. 4.7 p. 1000, differs but little from the general English rate. For, while in 17 large English towns the mort. rate is 4.9, in 64 healthy country districts it is 4.3 in 1000. He quotes the results of obs. by various private practitioners. Thus Mr. J. Clarke reports the loss of 22 mothers by death on 3847 deliveries; Dr. Churchill, of 16 on 2548; and, as a set-off against these, he gives the result of the record compiled by Mr. G. Rigden of Canterbury, who, out of 4132 consecutive cases in midwifery, yields, as the result of his obs., 9 deaths—3 from convulsions and coma, 4 from puerperal fever, 1 from heart disease, and 1 from a cause not stated. Finally:

Excluding such cases as death by smallpox, phthisis, and other fatal diseases not connected with childbearing, and correcting for defective specification, I am disposed to set down *the mort. at present prevailing in England at not more than 5 deaths of the mothers to every 1000 deliveries, or of 1 in every 200 deliveries*. Stillborn children may occasion death in childbirth, so that a correction should be made for their exclusion, and a correction of another kind is required for the births of twins and triplets to get the exact mort. of women in childbirth. Our tables, in their crude form, show the proportion of mothers dying to children born alive; the necessary corrections I have discussed in former reports. [BIRTHS.] [METRIA.] [PREGNANCY.] [PUERPERAL FEVER.]

CHILDREN.—In the divisions of life adopted by the Reg.-Gen. and the Census Commissioners, *Children* (as distinguished from "infants" below them, and "boys" and "girls" above them), are all who range from 5 to 10 years of age. The census of 1851 [England] gave the number of "Children" on this classification as 2,098,808; in 1861 the number was 2,350,261; in 1871—not yet ascertained.

CHILDREN, DISEASES OF.—The congenital malformations and developmental diseases of children rank as Order 1 in the Class of DEVELOPMENTAL DISEASES, and embrace premature birth, cyanosis, spina bifida, other malformations, and teething. The deaths in England from these causes show very little variation. In 1858 they were 12,412; in 1862, 12,787; in 1867, 14,666. Over a period of 15 years ending 1864, they averaged 995 per million of the pop. living.

The deaths in 1867 were thus divided: males, 8203; females, 6463. Of the males 7049 died under 1 year, and 8190 under 5; 9 between 5 and 10; 1 between 15 and 20; 2 between 20 and 25; and 1 between 25 and 30. Of the females, 5340 died under 1 year, and 6440 under 5; 12 between 5 and 10; 2 between 10 and 15; 3 between 15 and 20; 1 between 20 and 25; 3 between 25 and 35; and 1 between 35 and 40. The deaths at these more advanced ages owe their origin to diseases of childhood.

We propose to treat of the mort. of children more at large under INFANT MORT.

CHILDREN'S FORTUNES, INS. OF.—The *English Co. for Ins. Children's Fortunes* was projected in 1720. We have no details of the plan intended to be pursued; but it was prob. a system of endowment ins.

CHILDREN, INS. OF, AND INSURANCES FOR.—Between the years 1699 and 1712 various projects were put forward, having for their avowed object the Ins. of Children. These will be spoken of at large under LIFE INS., HIST. OF. We propose here to deal only with the modern phase of this branch of bus.

By the Common Law, an infant (that is a person under 21) cannot enter into a binding contract for anything not deemed a necessary, in relation to his station or condition. By the Act against Wagering Ins., 1774 (14 Geo. III c. 48), all ins. are prohibited in which the person effecting the pol. has not an interest in the life of the person ins. By the Friendly Societies Acts an infant may, however, enjoy all the benefits provided by asso. enrolled under them.

It was held in the case of *Holmes v. Blogg*, in 1818, that a pol. of ins. may be effected for the benefit of, and in the name of an infant upon his own life, or the life of another; but only upon the well-understood condition that upon attaining 21, any liability thereunder on the part of the former minor might be repudiated.

It was held in the case of *Halford v. Kynier*, before the Courts in 1830, that a parent has no insurable interest in the life of his child, for the word "interest" in the statute means pecuniary interest.

In a subsequent case Mr. Justice Bayley held that a father might ins. a son's life for the son's benefit.

The *Anglo-Australian* Ins. Asso., founded 1853, orig. a most comprehensive system of Ins. and Annu. for Children under the title of INFANT INS., of which the following were the main features :

Infant Assurances.—I. Deferred assu. on infant lives for £25 to £5000 on death at any time after 14 years of age. But should death occur before the age of 14, all the prems. would be returned.

II. Provisional assu. from 1 year of age for £100 and upwards on death at any time after 14 years of age; with the payment of £25 p.c. of the sum assured, for funeral purposes, in the case of death before 14.

III. Deferred endowment assu. for £25 and up to £5000 to be received by the child on his attaining either of the following ages, or payable earlier in the event of death after 14: viz. 21, 30, 40, 50, or 60. Should death take place before 14 years of age, then the whole prems. would be returned.

IV. Legacy assu., securing to a child a certain legacy from £100 to £5000, payable on the death of an uncle, aunt, or other relative or friend, provided the child be then alive.

V. Endowments, from £25 to £5000, payable on attaining the ages of 14, 21, or 30, the whole of the prems. to be returned should the life fail before attaining the specified age.

Infant Annuities.—VI. Immediate annu. from £10 to £300 p.a. for life.

VII. Temporary annu. from £10 to £300 p.a., to continue from six months till 14 years of age, or from six months to 21 years of age.

VIII. Deferred annu. for £10 and upwards, payable for the remainder of life on the child attaining either of the following given ages: viz. 14, 21, 30, 40, 50, or 60. The whole prems. returned should death occur before attaining the given age.

IX. Assu. annu., whereby £10 and upwards p.a. for the remainder of life is secured to the child on surviving either of the following specified ages: viz. 14, 21, 30, 40, 50, or 60. And also the sum of £25 and upwards payable at death at any time after 14 years of age, or the whole prems. returned if death occur before 14.

XII. Legacy annu., by which an income from £10 to £350 p.a. for life may be secured to a child after the death of an uncle, aunt, or other relative or friend.

All infant assu. effected under the age of ten carry *universal pol.*, which will allow the assured to travel by sea or land, and reside in any part of the world, without extra prem., or consent of the directors, or forfeiture of pol.

Most ins. offices grant *Endowment pol.* These will be spoken of under ENDOWMENT Ins.

Nearly all the industrial ins. offices grant pol. on the lives of children. The terms and conditions on which they are granted will be spoken of in our hist. of INDUSTRIAL INS. Regarding the practice, it may find some defence in the manufacturing districts, where every parent has an interest in the prospective earnings of his child; but it too frequently leads to the commission of the most unnatural of crimes. We have already referred to these under BURIAL CLUBS.

In 1867 a case was before the police courts wherein a nurse in charge of a child had ins. its life.

[ENDOWMENT INS.] [FRIENDLY SOS.] [INDUSTRIAL INS.] [INSURABLE INTEREST.]
CHIMNEY-SWEEPER'S CANCER.—A popular name of the Cancer, Scroti, or Munditorum, or Soot-wart.

CHIMNEY-TAX [Hearth-money] —A Tax levied by 13 & 14 Chas. II. c. 10—1662; abolished by 1 Wm. & Mary, c. 10—1689. The returns obtained from this Tax formed one of the bases upon which early estimates of the pop. of England were formed. [CENSUS.] [POPULATION.]

CHIMNEYS.—Chimneys are said to have been first introduced into our architecture about A.D. 1200. They were then confined to the kitchen and the large hall. Chafing dishes were used previously. By about 1310 Chimneys had become general. In 1774 a new Building Act was passed—14 Geo. III. c. 78—which was not only designed to regulate the building of Chimneys, but went further. Sec. 78 recites :

And whereas many of the parishes within the limits of this Act have been frequently put to considerable expense, occasioned by the neglect of the inhabitants, as well lodgers and inmates as housekeepers, in not causing their chimneys to be duly swept, by means of which alarms of fire are frequently made, to the great terror and danger of His Majesty's subjects, which prob. would be prevented if such inhabitants were obliged to defray and bear the charges and expenses attending such their neglects, or some reasonable part thereof.

Any rewards paid by the churchwardens, or other expenses incurred, were to be paid by the person causing such fire.

This act was amended in 1834 by 4 & 5 Wm. IV. c. 35, which having expired, was

re-enacted in 1840 by 3 & 4 Vict. c. 85—*An Act for the Regulation of Chimney Sweepers and Chimneys*. This last-named Act contains the following provision :

VI. And whereas it is expedient for the better security from accidents by fire, the improved construction of chimneys and flues provided by the said Act be continued ; be it enacted, that all withs and partitions between any chimney or flue, which at any time after the passing of this Act shall be built or rebuilt, shall be of brick or stone, and at least equal to half a brick in thickness ; and every breast-back and with or partition of any chimney or flue to be built or rebuilt shall be built of sound materials, and the joints of the wood well filled with good mortar or cement, and rendered or stuccoed within ; and also that every chimney or flue hereafter to be built or rebuilt in any wall, or of greater length than 4 feet out of the wall, not being a circular chimney or flue 12 inches in diameter, shall be in every section of the same not less than 14 inches by 9 inches ; and no chimney flue shall be constructed with any angle therein which shall be less obtuse than an angle of 120 degrees, except as is hereinafter excepted ; and every salient or projecting angle in any chimney or flue shall be rounded off 4 inches at least upon pain of forfeiture, by every master builder or other master workman who shall make or cause to be made such chimney or flue, of any sum not less than £10, nor exceeding £50 ; provided nevertheless that notwithstanding this Act chimneys or flues may be built at angles with each other of 90 degrees and more, such chimneys or flues having therein proper doors or openings not less than 6 inches square.

By the *Metropolitan Fire Brigade Act*, 1865—28 & 29 Vict. c. 90—it is provided :

23. If the chimney of any house or other building within the metropolis is on fire, the occupier of such house or building shall be liable to a penalty not exceeding 20s. ; but if such occupier proves that he has incurred such penalty by reason of the neglect or wilful default of any other person, he may recover summarily from such person the whole or any part of the penalty he may have incurred as occupier.

The penalties imposed by the 14 Geo. III. are repealed. [FIRE PREVENTION.]

Chimneys on fire constitute a considerable per-centage of the "calls" made to the Fire Brigade. [FIRE CALLS.]

CHINA.—China claims to be the oldest even of Asiatic nations ; but of its early hist. we know very little. In 1710 its pop. was estimated at 27,241,129 ; in 1757 at 190,348,228. In 1812 an official census was taken by order of Kia King. The pop. was found to be 367,632,907, giving a density of 283 to the square mile. In 1860 the pop. was estimated at 414,607,000 ; in 1867 at 450,000,000. Various other enumerations are said to have taken place. Dr. Bowring considered (1855) that "our greater knowledge of the country increases the evidence in favour of the approximate correctness of the official document." The Laws of China make provisions for a general system of registration, and punishment is awarded to those who neglect to regis. The machinery is confided to the Elders of the district, and a census *should* be taken annually.

The populous aspect of the country has been noticed by many writers. Among the first was Father Alvares Semedo, whose *Hist. of China* was pub. in Lond. in 1655, and who says :

This kingdom is so exceedingly populous, that having lived there two-and-twenty years, I was in no less amazement at my coming away than in the beginning at the multitude of the people. Certainly the truth exceedeth all hyperboles, not only in the cities, towns, and public places, but also in the highway there is as great a concourse as is usual in Europe on some great festival. And if we will refer ourselves to the *General Register Book*, wherein only the common men are enrolled, leaving out women, children, eunuchs, professors of letters and arms, there are reckoned of them to be 58 millions, 55 thousand, 1 hundred, and 4 score.

An earthquake throughout China occurred in 1662. It is stated to have buried 300,000 persons in Pekin alone. In 1731 another earthquake occurred which is said to have destroyed 100,000 in Pekin, and 80,000 in a suburb.

The enormous river pop. of China, who live only in boats—who are born and educated—who marry, rear their families, and die—who, in a word, begin and end their existence on the water, and never have or dream of any shelter other than its roof, and who seldom tread except on the deck or boards of their Sampons—show to what extent the land is crowded, and how inadequate it is to maintain the cumberers of the soil. In the city of Canton alone it is estimated that 300,000 dwell upon the surface of the river ; the boats, sometimes 20 or 30 deep, cover some miles, and have their wants supplied by ambulatory salesmen, who wend their way through every accessible passage.—*Bowring*.

The constant flow of emigration from China, contrasted with the complete absence of migration into China, has further been regarded as a striking evidence of the redundancy of pop. They crowd all the islands of the Indian Archipelago ; they spread over the South Seas ; they reach Australia, and penetrate to the West Indies. California has long formed a considerable outlet for them ; they are rapidly spreading over the entire U. S.

In 1822 nearly the entire city of Canton was burned. The lightness of the materials used in construction renders the towns peculiarly liable to destruction by fire.

In 1848 Hong-kong and neighbourhood was visited by a violent typhoon. Immense damage was done to the shipping ; upwards of 1000 boat-dwellers on the Canton rivers were drowned.

In 1855 Dr. Bowring, then Brit. Plenipotentiary at Hongkong, communicated to our Reg.-Gen. a paper on the *Pop. of China* [printed in *Statistical Journal*, vol. xx. p. 41], from which some of the preceding facts are drawn. He says further :

While so many elements of vitality are in a state of activity for the reproduction and sustenance of the human race, there is prob. no part of the world in which the harvests of mort. are more sweeping and destructive than in China ; producing voids which require no ordinary appliances to fill up. Multitudes perish absolutely from want of the means of existence—inundations destroy towns and

villages, and all their inhabitants ; it would not be easy to calculate the loss of life by the typhoons or hurricanes which visit the coasts of China, in which boats and junks are sometimes sacrificed by hundreds and by thousands. The late civil wars in China must have led to the loss of millions of lives. The sacrifices of human beings by executions alone are frightful. At the moment at which I write it is believed that from 400 to 500 victims fall daily by the hands of the headsman in the province of Kwangtung alone. Reverence for life there is none, as life exists in superfluous abundance.

Infanticide, especially of female children, is one of the means employed towards lessening the redundancy of human life. The following is a somewhat remarkable decree of the Emperor Kanghi regarding this practice, which some writers have denied :

Edict prohibiting the drowning of children.—When a mother mercilessly plunges beneath the water the tender offspring to which she has given birth, can it be said that it owes its life to her who thus takes away what it has just begun to enjoy ? The poverty of the parents is the cause of this wrongdoing ; they have difficulty in earning subsistence for themselves, still less can they pay nurses, and undertake all the necessary expenses for their children ; thus driven to despair, and unwilling to cause the death of two persons to preserve the life of one, it comes to pass that a mother to save her husband's life consents to destroy her children. Their natural tenderness suffers ; but they at length determine to take this part, thinking themselves at liberty to dispose of the life of their children, in order to prolong their own. If they exposed these children in some unfrequented spot, their cries would move the hearts of their parents : what then do they ? They cast the unfortunate babe into the current of a river, that they may at once lose sight of it, and in an instant deprive it of life. You have given me the name of Father of the People ; though I cannot feel for these infants the tenderness of the parents to whom they owe their being, I cannot refrain from declaring to you, with the most painful feelings, that I absolutely forbid such homicides. The tiger, says one of our books, though it be a tiger, does not rend its own young ; towards them it has a feeling breast, and continually cares for them. Poor as you may be, is it possible that you should become the murderers of your own children ? It is to show yourselves more unnatural than the very beasts of prey.—*Lettres Edifiantes*, vol. xix., p. 101-2.

Yet to be without children is almost regarded as a mark of reproach ; or as Sir John Bowring puts it, "A childless person is deemed an unhappy, not to say a degraded, man."

The marriage of children is one of the great concerns of families. Scarcely is a child born in the higher ranks of life, ere the question of its future espousal becomes a frequent topic of discussion. There is a large body of professional match-makers whose business it is to put all the preliminary arrangements in train. But severe laws prohibit marriage within certain degrees of affinity. So strong is the objection to the marriage of blood relations, that a man and woman of the same *sing*, or family, cannot lawfully wed.

Chinese fire engines are described as odd-looking machines. Each one is carried on a pole, by four men ; the pole passing through the upper part. The engines consist of forcing pumps, worked by a double lever, the jet of water being projected through a brass nozzle about six feet long, working on a swivel from the upper portion of the pump. They have no hose, yet a very effective jet can be projected some distance. The great fault appears to be the rapidity with which the supply of water is exhausted. They have no suction hose, and have to be supplied with water from buckets, like the early fire engines used in Europe.—*Young*.

But if their engines are defective, their brigade arrangements in other respects seem very good. Dr. D. F. Rennie gives the following account of a fire he saw at Tientsin in 1862, and the means employed to extinguish it :

To-day we met a Chinaman with a sort of hand drum, beaten after the fashion of a child's toy. With this he was making a great noise, and while we were speculating what it meant some flames were seen on the opposite side of the canal near the French quarter, and a number of men coming down the opposite bank in line, with white flags and black letters on them. We concluded that they were connected with the police, and that the flags were to indicate the direction of the fire, which the beating of the drum was intended to announce to the neighbourhood. We accordingly followed, and soon reached the fire, which had settled on a cluster of houses up a narrow lane, in which fortunately close to the burning houses there was a vacant space. We had hardly got to it before a number of men bearing gaudy flags and standards arrived, followed in rapid succession by eight fire engines. . . . In a short time the inclosure was filled with flags of all colours and devices, tomtoms, gongs, etc. ; the noise and general confusion which prevailed baffling description. Some sailors from a Russian gunboat, frozen in not far off, and a number of French soldiers, were actively employed on the roofs of the houses detaching the thatching and other combustible material. Fresh engines continued to arrive, and without heeding the direction, the moment they got into the open space they commenced discharging their contents towards the flames. One engine I saw playing right on the Russians and Frenchmen, with the thermometer 20 degrees below freezing. They seemed however not to mind it, but continued to work away with a right good will. As darkness began to creep on, the effect of the lines of flags and lanthorns was very picturesque. Taken altogether it was one of the gayest of sights I have seen in China, and not unlike a gigantic teetotal procession at home. The Tientsin fire brigade appears to consist of several sections, each of which has a distinctive uniform, and distinctive coloured flags. The engines were supplied with water from the Grand Canal, close to its junction with the Peiho, carried in buckets slung in the ordinary way from the end of a bamboo supported across the shoulder. In this way it was brought up from different parts of the canal, where the ice had to be broken for the purpose. The system of lighting by lanthorns was very perfect, and altogether the arrangements gave the idea of being wonderfully complete, more especially the wonderful rapidity with which the different sections of the fire brigade were on the ground with their engines.—*British Arms in Northern China and Japan*.

That ins. has long been carried on in China is well known—how long is the only mystery connected with it. Its application has been made to various useful purposes, as fire ins. ; the ins. of life interests ; of relief in time of sickness ; ins. of growing crops ; and ins. against lawsuits. It seems that the bus. is carried on upon the principle of mut. contribution, in a manner not dissimilar to that which prevailed amongst the old English gilds.

We have, in the writings of M. Skatchkoff (a Russian agriculturist, long resident in China), an account of the formation of asso. for the ins. of growing crops against fire, or destruction by civil commotion, or by cattle, which prevail generally in the rural districts. It is as follows. The landholders of each individual village, with the residents in its immediate neighbourhood, form a separate so., the affairs of which are conducted by the village Elders, without any interference on the part of the Gov. officials. A general meeting of the villagers, desiring that class of protection, is convened; but a day or two previous to the meeting, three or four Elders, or four or five of the most influential among the villagers, assemble in the joss-house, for the discussion of the necessary preliminaries: such as forming an approximate estimate of the extent of land under cultivation, and therefore of crops to be ins., and of the prob. rates of prem., causing proclamation to be made of their proceedings, and giving notice thereof to the police authorities. Affairs having been so far adjusted, on the day of meeting each landholder—leaseholders as well as freeholders being eligible—who desire to participate in the mut. ins. of the village crops, is expected to appear before the elders in the temple to affix his signature against his name in the list prepared as aforesaid. Those who do not appear are considered to be unwilling to share in the arrangement. The operations of the asso. when formed appear to be on the preventive principle, thus:

The number of watchmen to be hired is then determined in accordance with the extent of land [crops] ins. About Pekin two watchmen are allowed to every 300 English acres for the open country. In hilly districts, and where the view is much impeded by inclosures, the number is doubled. Each watchman receives about 12s. for the whole period of his service. The precise rates of prem. to be charged for each acre of land ins. are then fixed. This is in a great measure dependent upon the condition of the adjacent districts. When all is quiet, and no reason exists for anticipating any serious disorders, it is considered sufficient to have in hand, after the watchmen have been paid, a surplus equal to one-tenth of the sum collected in prems. On the other hand, when disturbances are rife, and the general aspect of affairs less assuring, the rates of prem. are raised, so as to leave in some cases, after paying the watchmen, a reserve equal to one-fifth of the total amount insured [? of prems.].

These arrangements are made for the duration of each crop separately—sometimes for still shorter periods. In many districts the winter crops are ins. from seed-time to harvest, which of course includes a provision against injury by cattle, and losses by robbery and fire. Around Pekin the ins. of winter crops is made from the middle of June, when the grain has attained its full growth, until harvest only. Spring crops are invariably ins. from the day of sowing to the day of harvest. The fields are watched day and night; for every thief taken in the act, and for every head of cattle caught trespassing, the watchmen receive a reward from the so. of 300 tsians, or about 8d. Each instance of neglect of duty is punished by a fine of double the amount. The punishment of the thief is severe; night thefts are punished less severely than those in broad daylight. Cattle found trespassing are impounded, to be redeemed by payment of a fine, varying with the description of cattle and other circumstances.

In the event of fire occurring in an ins. field, the Elders are bound to inquire into its causes. If it proves to have originated with the owner, he pays the so. a fine of 1s. (500 tsians). If it were caused by another person, the delinquent pays a fine of ten times the value of the produce destroyed, the owner being indemnified by the so. For all losses the person ins. receives immediate payment of a sum equivalent to one and a half times his loss, *estimated according to the prob. scale of prices during the ensuing winter*. All money remaining over as a surplus out of the prems., fines, etc., is treated as a reserve fund, applicable to various public purposes, such as the repairs of the schools, temples, etc., and in providing gratuities for the police. The funds are invested by way of advance to village landowners, at the rate of 1 p.c. p. month. Any inadequacy in the funds is made up by an extra *pro rata* charge upon the acreage ins.

The practice of ins. against law proceedings is said to owe its origin to the well-known rapacity of Chinese officials, designated in the figurative language of the people, "The Tiger's Cruelty." Against these dangers nearly every village has its ins. asso. The following account of their formation and working is highly instructive:

When an asso. of this character is to be formed, the Elders prepare a list of the inhabitants, to which all who desire to join affix their signatures. Armed with this authority, the Elders then enter into secret negotiations with the police inspector of the district as to the amount of composition to be paid to him for non-intervention in every case calling for the action of the police. Among these are cases of sudden death, suicides, compositions between debtors and creditors, family disputes, and the like. Availing themselves of their secret understanding with the authorities, the Elders take care to arrange all such matters privately, without affording any opportunity for police intervention. The rates of hush-money are generally small, varying from 10s. to 25s. of our currency.

These contracts are adhered to most scrupulously by both parties. All sums disbursed by the Elders in this way are repaid to them within a period of ten days by the other members, each contributing in proportion to the number of acres of land he holds. Membership is not compulsory; but the results are said sometimes to be unpleasant to those who decline to join, and these are generally in a small minority.—*Ins. Reporter*, Philadelphia.

We do not trace the practice of L. ins., in its simple aspect of making provision for families, amongst the Chinese. It may exist. The Brit. offices have not yet extended their operations beyond the range of the Brit. residents. The climate is somewhat excessive; that is, of greater range of temperature than is usual within the same parallels of latitude. Pekin, the capital, lies a degree south of Naples; and yet while the mean

temperature of the latter is 63° , that of the former is only 54° . In summer, however, the heat reaches 90° to 100° ; while in winter the rivers are frozen for several months. The Chinese lead most temperate lives, and insanity and other mental diseases are almost unknown amongst them.

CHINESE ARITHMETIC.—The Chinese have a most ingenious method of reckoning by the aid of the fingers, performing all the operations of addition, subtraction, multiplication, and division, with numbers from 1 up to 100,000. Every finger of the left hand represents nine figures, as follows:—The little finger represents units, the ring finger tens, the middle finger hundreds, the fore-finger thousands, the thumb tens of thousands. When the three joints of each finger are touched from the palm towards the tip they count one, two, and three of each of the denominations as above named. Four, five, and six are counted on the back of the finger joints in the same way; seven, eight, and nine are counted on the right side of the joints from the palm to the tip. The forefinger of the right hand is used as a pointer. Thus, 1234 would be indicated by first touching the joint of the forefinger next the hand on the inside; next the middle joint of the middle finger on the inside; next the end joint of the ring finger on the inside; and finally the joint of the little finger next the hand on the outside. The reader will be able to make further examples for himself. See also SHWAN-PAN.

CHINESE DIVISIONS OF LIFE.—To every decade of life the Chinese apply some special designation. The age of 10 is called "the Opening Degree;" 20, "Youth expired;" 30, "Strength and Marriage;" 40, "Officially apt;" 50, "Error knowing;" 60, "Cycle closing;" 70, "Rare Bird of Age;" 80, "Rusty visaged;" 90, "Delayed;" 100 "Age's Extremity." Among the Chinese the amount of reverence grows with the number of years.—*Bowring*.

CHINESE SHWAN-PAN [or ABACUS].—An instrument for facilitating arithmetical calculations. See CALCULATING MACHINES.

CHISHOLM, DAVID, Act. of *North British and Mercantile*. He entered that office in 1841, and became its Act. in 1852. He had previously been under the able training of Mr. Edward Sang, and assisted that gentleman in the completion of his well-known actuarial T. Mr. Chisholm has contributed some valuable papers to the hist. of L. contingencies.

In vol. ii. of *Assu. Mag.* [1852] there is a paper from his pen, *On a New Method of Constructing a T. of the Prob. of Survivorship between Two Lives for every Combination of Ages, and also a T. of the present value of Survivorship Assurances of £1 on (x) against (y)*. This paper, we believe, was afterwards separately pub. Mr. Peter Gray offered some obs. upon it in a paper read before the Inst. of Act. in 1852, and printed in vol. v. of *Assu. Mag.*, p. 107.

In vol. iii. of *Assu. Mag.* [1853] there is a letter on the *Proper Expression for the amount of £1 with the Fractional Part of a Year's Interest*, arising out of the consideration of a paper by Mr. E. J. Farren, "On the period intervening between the date of death and payment of sum assured."

In vol. iv. there is a letter, *On the Values of Reversions payable at the Instant of Death*.

In 1858 Mr. Chisholm pub. *Commutation Tables for Joint Annu., and Survivorship Assu. based on the Carlisle Mort. at 3, 3½, 4, 5 and 6 p.c. Int.; with T. of Annu. and Assu. on Single Lives, and other useful Tables, and an Intro. on their Construction and Use*. 2 vols., large octavo. It is impossible to speak too highly of the merits of this work. "They present the *ne plus ultra* of perspicuity and neatness," and have received the highest encomiums from actuaries on either side the Atlantic. Mr. James Meikle, in a letter to the *Assu. Mag.* [vol. vii. p. 297], says:

Besides introducing many new kinds of transactions, they greatly abbreviate the labour of the calculation of those transactions, with which we are already acquainted. In "Post obits," however, they afford a still greater advantage; they enable the actuary to ascertain *more correctly* the amount which should be charged the heir of entail in repayment of the sums or annu. advanced to him. . . . Mr. Chisholm's T., however, enable the actuary to make the sum assu. increase yearly in proportion to the outlay."

A writer (W. F. B.) in vol. viii. of *Assu. Mag.*, p. 110, says:—"Indeed, by Mr. Chisholm's arduous labours, the commutation system, originated by Mr. Barrett, improved by Mr. Davies, and extended and illustrated by Mr. [David] Jones, has been rendered complete in so far as relates to one or two lives."

CHISHOLM, GEORGE, was Sec. of *Essex and Suffolk Equitable*, from 1850 to 1852.

CHISHOLM, JAMES, Actuarial Assistant at the *Imperial Life* since 1869. He is a son of Mr. David Chisholm, of Edin., and was previously in the head office of *North Brit. and M.*, which office he entered in 1861, working his way through several of the departments. In 1868 he read before the Inst. of Act. a paper: *On the Arrangement of Commutation, or D. and N. Tables*. The paper is printed in *Assu. Mag.*, vol. xiv. p. 200.

CHOKE-DAMP.—Carbonic acid; the irrespirable air of coal-pits, wells, and, in a modified degree, of the Metropolitan Railway. [FIRE-DAMP.]

CHOLERA, ASIATIC, OR EPIDEMIC [CHOLERA MORBUS].—It seems to be made clear by reference to the writings of Hippocrates—the father of medical science, who flourished about 400 years B.C.—and by the writings of Whang-shoo-ho, his contemporary in China, and also by the writings of Susruta, the greatest Hindoo medical authority, that the disease now designated Asiatic Cholera was known in the earliest times in Greece, China,

and India. Subsequent writers keep up the slender chain of its history down to modern times, when in some sort it has usurped the features of the Plague—that dread scourge of the dark and middle ages. We propose to review the hist. of this disease briefly and chronologically.

Garcia del Huerto, a physician practising in Goa about 1560, describes a visitation which is supposed to have been the Cholera. It is believed that Arungzebe's army suffered from it at the siege of Bijepoor in 1657. It seems certain that it was prevalent in India in 1769. In 1774 we hear of it again in India. Sir Edward Hughes's squadron suffered from the malady when off Ceylon in 1782. It seems to have been nothing else than Cholera that ravaged the Mahratta army under Hurree Punt, on the Toongboodra river in 1786; indeed Hurree Punt records with his own hand, "The loss sustained by the army in consequence of the Cholera Morbus is very great. Medicines are liberally supplied; some do recover, but by far the greater part die."

But we may pause and look nearer home. Sydenham, *our* great father of medicine, in his *Opera Obs. Med.*, pub. 1669, describes a species of Cholera, which he says lasted a month, and—"Cam anni partem, quæ æstatem fugientem atque autumnum complectitur unice ac eadem prorsus fide, qua veris primordia hirundines, aut insequentis tempestatis favorem cuculus amare consuevit." This beautiful passage being done into English may be read as follows:—"Habitually loves that part of the year which embraces the fall of summer and the autumn; and with that same instinct with which swallows (love) the beginning of spring, or the cuckoo loves the warmth of the season succeeding to it."

He also describes, in a later work, the severer epidemic of 1676—"Insueto tempestatis calore evector,"—as having appeared while the season was abnormally hot.

In 1817 the first serious outbreak of C. incident to its endemic form occurred at Jessore, near Calcutta, in the delta of the Ganges, and destroyed 10,000 persons. It reached Bombay 10th August, 1818, and committed some ravages. The attention of the Indian authorities was thus drawn to the subject before the prob. of its ever reaching our shores had been contemplated. The Marquis of Wellesley effected improvements in Bengal in 1821 in view of the C.; and we shall see all through the present art. that Indian officials have devoted the most painstaking attention to this epidemic. The Brit. medical attendant at Jessore declared that the outbreak of 1817 was not the first appearance of C. there. It will be instructive to pause for a brief glance at the conditions of the district in which the disease on this occasion—the first on which its origin and progress were actually observed upon by well-qualified practitioners—occurred. For this purpose we must fall back upon the early reports, to be presently mentioned.

Jessore, at the period in question, was a crowded, dirty, ill-ventilated town, surrounded by a thick jungle, and in the rains by an immense quantity of stagnant water.—*Jameson*. The epidemic had not one but various local sources in the level and alluvial, the marshy and jungly tract of country which forms the delta of the Ganges, and extends from thence to Burrampooter. For here we find it as early as June and the beginning of July, 1817, noticed as prevailing to a serious extent in Nuddea, a province which is stated to be notorious for the disease in its endemic form, and in Decca.—*Orton*. In Sylhet the influence of situation was perhaps more remarkable than in any other quarter. It appeared that the villages in which it raged most extensively were considered by the natives as comparatively unhealthy and obnoxious to fevers of the intermittent type; being exposed to the effluvia arising from marshes and extensive lakes, in which the Zila abounds, particularly towards the south-west division, where the greatest number of victims fall. The Sepoy *lines*, on the contrary, being placed from 60 to 100 feet above the general level of the country, had scarcely any cases, excepting such as occurred in persons on guard at the different outposts.—*Jameson*.

In Calcutta the disease was from first to last most prevalent in the lower parts of the town and suburbs, as the Bura Bazar, Simeleia, Dyahutta, and Suwah Bazar; and in the suburbs the villages of Khidderpore, Bhuwanipore, Manicktolla, Kurrya, Entally, Chitpore, and Sealdah. These dependencies are everywhere intersected by pools, broad ditches, and channels, which, being imperfectly drained, are in the rainy season always full of stagnant water and rank weeds. From this plentiful source of corruption foul air is constantly given forth; and as all ventilation is obstructed by large groves of trees and vegetation of every description, it is there concentrated until it becomes entirely unfit for the purposes of respiration. The miserable condition of the generality of the inhabitants of these villages is hardly to be imagined. Each hamlet is made up of many mud or straw huts, generally from 6 to 12 feet square, placed so close to each other as to leave scarcely room to pass between them. In every one of these wretched hovels a whole family—sometimes consisting of 6 or 8 persons—resides; and not unfrequently cows, pigs, and other domestic animals add to the filth and foul atmosphere in which they abound. The higher class of natives and Europeans, generally inhabiting the better raised and more airy parts of the town, suffered proportionably less than the lower ranks.

Such was the condition of a large part of the dense pop. in the birthplace of the modern Asiatic C., as shown by official reports made at the time. The returns of the mort. among the natives are very imperfect; but they show that while many thousands perished in Calcutta, and the districts on the Ganges, as far as Allahabad, the casualties

higher up the river were comparatively fewer. In Agra the deaths did not exceed 10 daily, although the town contained 30,000 people. Not 500 in all died in Muttra; and about a like number died in the immense city of Delhi.

About 1819 there was prepared for the Indian Gov. *Report on the Epidemic Cholera Morbus in the Presidency of Bengal in the Years 1817-18-19*, by James Jameson, Esq. This is the document from which we have already quoted. In 1819 there was pub. in Bombay: *Reports on the Epidemic Cholera of Hindostan and the Peninsula of India since 1817*. In 1824 there was pub. in Madras: *Report on the Epidemic Cholera as it appeared in the Presidency of Fort St. George, drawn up by Wm. Scot*. This contains an appendix of sick returns and meteorological tables. In 1827 Mr. K. H. Kennedy pub. in Calcutta: *Notes on Epidemic Cholera*.

We next hear of the Cholera in Persia in 1821; and at Astrakhan in Sept. 1823. There was every reason to believe that it was being brought westward by the caravans. Several local epidemics occurred in Persia between the years 1823 and 1830. The city of Ispahan issued orders to the caravans to pass in another direction, by Yezd; they did: Yezd had a C. visitation—Ispahan escaped. Teheran, the seat of Gov. of all Persia, was vigilant at first, and escaped; it relapsed, and had a severe visitation in 1829. C. was now on the highway to Russia, where we hear of it in the following year, 1830. It was said to have derived new force this year on the western shores of the Caspian Sea. It ravaged Germany in 1831. The city of Vienna, and the Austro-Polish province of Galicia, suffered severely from this visitation. In the former, in 18 weeks, 411 deaths occurred out of 690 cases within the city, and 1547 out of 3000 attacked in the suburbs. In Galicia 97,770 are reported to have died out of 260,944 attacked. The Austrian Gov. has pub. a seemingly circumstantial account of this visitation. The divisions of Prussia eastward of the Vistula suffered severely.

In its march from Asia through the Continent of Europe it has been computed that the C. carried off more than 900,000 lives. It was still on the march; and ultimately encircled the world, in the language of Dr. Farr, "destroying men wherever it found them in circumstances that lent it power."

In 1831 the following documents regarding C. were pub.: (1) *Rapport sur le Cholera Morbus Pestilential*, par Alexandre Moreau de Jonnès, with map (Paris); (2) *Rapport de l'Académie Royale de Médecine sur le Cholera Morbus* (Paris); (3) *Rapport sur le Cholera Morbus fait à la Société de Médecine de Lyon*, par L. P. A. Gauthier (Lyons); (4) *Observations sur le Cholera Morbus recueillies et publiées par l'Ambassade de France en Russie* (Paris). About this date Dr. Kennedy pub. his *Hist. of Contagious Cholera*, which reached a 3rd ed. in 1832, and from which last ed. we have quoted.

The first appearance of this modern C. epidemic in Gt. Brit. was at the village of Team, near Gateshead, in Aug. 1831. It appeared in Sunderland on 24th Oct. same year, and visited Edin. on 22nd Jan. 1832. One week later, and it had commenced its ravages at Rotherhithe and Limehouse, in the East Lond. district. It was afterwards reported that 48 deaths occurred from C. in Lond. in 1831. It did not appear in Dublin until 3rd March, 1832.

The *Lond. Gazette* of 21st Oct., 1831, announced the precautions to be taken against the spread of C. These were mainly the estab. of a Board of Health in every town, to correspond with the Board in Lond., and to consist of magistrates, clergy, and two or three of the faculty of medicine. Large towns were to be divided into districts, with committees of inspection. Cleanliness and free ventilation were strongly recommended; the immediate burning of old rags, paper, cordage, clothes, hangings, etc.; the copious use of soap and water to furniture, clothes, and person; chloride of lime and water to drains and sinks, etc.; hot lime wash to the walls and roofs; and every particle of filth to be carefully removed.

On the 13th Feb., 1832, a notice was issued from the Council Office, at Whitehall, announcing that fatal cases of C. had occurred at Rotherhithe, and spread indescribable alarm through the metropolis. All the horrors which Defoe had depicted of the Great Plague rose before the imagination. The physicians were divided in opinion; some contending that no new disease existed, and that it was not contagious. The ravages of the disease were considerable during Feb., March, and April, and then abated; but it again burst forth towards the end of the summer with more violence than ever. The pub. of the weekly B. of Mort. was suspended. On the 2nd Sept. the number of cases reported to the central board, exclusive of Lond., was 68,855, and the total deaths 24,180. By the end of Nov. the disease had died out in Gt. Brit., but it had then reached the Canadas and U.S.—*Wade*.

The suspension of the weekly B. of Mort. appears at first sight to have been a very remarkable proceeding; seeing that the Bills, as we have already fully shown [BILLS OF MORT.], were originated for the very purpose of giving information regarding the ravages of the Plague. Assuming the statement to be true, and we take it from Wade [*Wade's Brit. Hist. Chronologically Arranged*, 5th ed., 1847], an authority usually very accurate, it can only have originated in a knowledge of the fact that the returns furnished by the Bills were very defective, and calculated to mislead. We suspect, for many reasons, this to be the true solution.

The Board of Health collected much information respecting this epidemic. A table

was prepared showing the names of places attacked ; the date of the first case : the date of the last case ; the number of days' duration ; the total deaths ; the total recoveries ; the proportion of deaths to cases ; the pop., and the proportion of pop. attacked, and proportion of deaths. All the places were numbered on one of Arrowsmith's large maps. The T. and map are now in the library of Her Majesty ; but copies are very properly deposited in the office of the Reg.-Gen. From these documents it appears that the number of deaths in " Lond. and its vicinity," between Feb. 14 and Dec. 18, 1852, were 5275—made up as follows : from 14 Feb. to 15 May, 994 ; from 15 June to 31 Oct., 4266 ; and for the remainder of the year, 15. The deaths in " the country " were returned as 26,101 ; the total deaths in Gt. Brit. standing therefore at 31,376. The deaths in Ireland up to 1 March, 1833, were returned as 21,171—making total for U. K., 52,547. The deaths from all causes recorded in that year appear to have been very far short of what the real facts must have been ; and therefore throw doubts upon all the figures. Dr. Farr points out, " The returns which the Board of Health in 1832 procured were voluntary, partial, and evidently defective. The pop. of the places in Gt. Brit. which made returns was 5,223,657 : so it would appear the majority of the places in the country altogether escaped attack or notice."

We shall have occasion to compare some of the figures of this period with those of 1849 ; and some points of very marked resemblance will be found. [See 1849.]

Early in 1832 the aid of Parl. had been invoked, and a measure was passed, receiving the Royal Assent 20 Feb., 1832—2 Wm. IV. c. 10—*An Act for the Prevention, as far as may be possible, of the Disease called the Cholera, or Spasmodic or Indian Cholera, in England.* The preamble set forth :

Whereas it has pleased Almighty God to visit the U.K. with the disease called the Cholera, or Spasmodic or Indian Cholera : and whereas, with a view to prevent as far as may be possible, by the Divine blessing, the spreading of the said disease, it may be necessary that rules and regulations should from time to time be estab. within cities, towns, and districts affected with, or which may be threatened by, the said disease ; but it may be impossible to estab. such rules and regulations by the authority of Parl. with sufficient promptitude to meet the exigencies of any such case as it may occur. Be it therefore enacted, etc.

And it was enacted that H.M. Privy Council might at any time issue Orders in Council to prevent the spreading of Cholera in England. The Act was a temporary one. It was renewed by 3 & 4 Wm. IV. c. 75, and then expired ; other provisions having been made.

The best records regarding this outbreak in Gt. Brit. were kept in Glasgow. On the 13th Feb., 1832—same day as in Lond.—the existence of C. in that city was officially announced to the Board of Health. A few cases had been believed to exist previously. The outbreak continued for a period of nine calendar months, and attacked, according to the returns made to the Board, 6208 individuals. The deaths according to the Mort. bills amounted to 3166. During the whole period of the continuance of C., diarrhoea was very prevalent among all classes ; but among those in comfortable circumstances it was easily checked. Of the entire pop. 1 out of every 32½ was attacked, and 1 out of every 67½ died of it. In order to bring out the facts in the clearest possible light there was prepared the following :

Table Exhibiting the Mort. in Glasgow in the Years 1831, 1832, and 1833, with the Increase of Deaths in 1832 at each period of life ; and the number of Deaths from Epidemic Cholera at each age, distinguishing the Sexes :

Ages.	1831.	1832.	Increase in 1832.	Cholera in 1832.	1833.	Deaths from Cholera in 1832.	
						Males.	Females.
Still-born.	566	624	58	...	582	...	...
Under 1 year.	1219	1326	107	18	1251	10	8
1 and under 2	755	973	218	29	730	15	14
2 " 5	566	994	428	83	826	40	43
5 " 10	265	425	160	106	291	50	56
10 " 20	322	433	111	132	295	61	71
20 " 30	426	869	443	358	432	136	222
30 " 40	455	979	524	529	451	235	294
40 " 50	461	1037	576	639	441	284	355
50 " 60	463	913	450	556	406	263	293
60 " 70	477	827	350	444	401	207	237
70 " 75	238	376	138	155	217	64	91
75 " 80	130	263	133	62	127	25	37
80 " 85	127	141	14	44	119	20	24
85 " 90	51	68	17	11	46	9	2
90 " 95	16	25	9	...	16	...	...
95 " 100	9	2	...	...	1	...	...
100	1	2	...	...	...	...	...
103	...	1	1	...	...	...	...
Totals	6547	10,278	3731	3166	6632	1419	1747

It is seen from this T. that the mort. of females by C. exceeded that of males by 328. The mort. of Glasgow at each period of early life, indeed at every age under 50, had uniformly averaged more among males than females ; but from C. the female deaths at every period of life, with two exceptions, exceeded the males—the exceptions being at 2 years of age, when they were as 22 to 25 ; and at 85, when they were as 2 to 9. The following T., extracted from the B. of Mort. for 1832, gives the number of deaths from C. in each month :

January	—	June.....	196	November ...	25
February 87		July.....	441	December ...	—
March 264		August ...	1222		
April 229		September.	243	Total ...	3166
May 125		October ...	334		

Certainly one important result followed the obs. made in 1831-2. It was found that C. in its worst form was preceded by diarrhoea ; and that this diarrhoea was sometimes in a mild form, in others a first stage of the disease. Now to arrest this diarrhoea is to prevent C., as to extinguish a spark is to prevent a conflagration. It is true (says Dr. Farr) that perhaps 90 cases out of a 100 of epidemic diarrhoea left to themselves go no further ; but it is equally true that the 10 residual cases turn into Cholera if they are not treated in the first stage ; and the fact that one of the 10, even with treatment, turns into C., does not invalidate the practice.

In 1832 also a severe outbreak of C. occurred in Paris. 18,654 deaths were reported to have occurred between March and Oct. of that year. Under date 1849 in this art. we shall give a T. showing the monthly intensity of the epidemic on this occasion.

In 1832 various important publications appeared regarding the C., viz. :—(1) *A Warning and Admonition to the Brit. Public on the Introduction of the Cholera of India*, by Sir Gilbert Blane, M.D. ; (2) *Report on the Chemical Pathology of the Malignant Cholera*, by W. B. O'Shaughnessy ; (3) *Pop. Returns of 1831, with an Appendix as to Cholera Morbus in England in the 14th Century* ; (4) *Rapport au Comte de Rigny sur le Cholera Morbus observé dans l'Inde, en 1829-30*, par J. J. A. Souty (Paris) ; (5) *Rapport à l'intendance Sanitaire de Rouen sur le Cholera Morbus à Sunderland, Newcastle, et les Environs*, par Emile Dubuc (Rouen) ; (6) *Relation Médicale de la Commission de Marseille envoyée à Paris, pour observer le Cholera Morbus* (Marseilles) ; (7) *Official Reports by Drs. Russell and Barry on the Cholera Spasmodica in Russia in 1831* ; (8) *Report on Spasmodic Cholera by the Massachusetts Medical So.* (Boston, U.S.).

In 1833 was pub. by Sir Gilbert Blane, Bart., *Select Dissertations on several Subjects of Medical Science*, and therein some interesting obs. were contained regarding the nature and progress of the C. epidemic.

In 1834 there was pub. in Paris, *Rapport sur la marche et les effets du Cholera Morbus dans Paris et les communes rurales du Département de la Seine*.

In 1837 another outbreak of C. occurred in Rome, the Two Scilies, Genoa, Berlin, etc. We are informed, upon what appears good authority, that in the four months July, Aug., Sept., Oct., no less than 5419 deaths occurred in the Imperial city, out of a pop. not exceeding 156,000.

In 1837 or 1838 Captain A. M. Tulloch and Mr. Henry Marshall, Deputy Inspector of Hospitals, prepared for the Sec.-at-War a *Report on the Sickness and Mort. among the Troops in the West Indies*. An abstract of that report, prepared by Captain Tulloch, was given in vol. i. of *Statis. Journ.*, at p. 429 of which is the following :

The negro race suffer to a much greater extent than white troops by epidemic C. When this disease made its appearance at the Bahamas, though none of the white troops died from it, there were 20 of the black troops cut off out of 62 attacked, and it ran very rapidly to a fatal termination. *The same has been observed wherever the native troops in the East Indies have been attacked by this disease.*

In 1838, 331 deaths were regis. from C. in England, and no less than 2482 from Diarrhoea. A table at the end of this art. will show the deaths ann. from this date. In 1838 Dr. Boehm, of Berlin, pub. an able work on the C., which attracted much attention in Europe.

About 1838 or 1839 Major Tulloch prepared a *Statistical Report on the Sickness and Mort. among the Troops in the U.K.* An abstract of this, prepared by Mr. J. W. C. Lever, is pub. in *Statis. Journ.* [vol. ii. p. 250], from which we draw the following :

Epidemic Cholera.—During the 3 years that this disease prevailed, about 2·8 p. 1000 of the strength were ann. cut off by it. This epidemic appears to have exerted its fatal influence in all localities with undeviating regularity ; for we have here instances of different bodies of troops quartered in various situations throughout the kingdom, and yet the proportion of deaths is within a fraction the same in all ; but it did not prove equally fatal to all classes, the mort. having increased progressively with the advance of age, as is shown by the following T. :

Ages.	Aggregate strength of Cavalry and Household Troops during the 3 Years which Cholera prevailed.	Deaths by Cholera in that Force during the 3 Years.	Ann. Rate of Mort. by Cholera at each Age.
Under 18	548	—	—
18 to 25... ..	14,103	32	2·3
25 to 33... ..	13,336	33	2·5
33 to 40... ..	7223	29	4·
40 to 50 and upwards	2229	11	4·9
Total	37,439	105	2·8

Of 171 treated for this disease among the Dragoon Guards and Dragoons, 54 died, or about one-third of the whole number attacked. Among the other troops the proportion was much the same.

In 1840 there appeared in the *Journ. of the Statistical So.* [vol. iii. p. 113], *Report of a Committee of the Statistical So. of Lond. appointed to collect and inquire into Vital Statistics, upon the Sickness and Mort. among the European and Native Troops serving in the Madras Presidency, from the Year 1793 to 1838.* From this we take the following :

Cholera.—The Madras returns do not distinguish between epidemic and the milder disease of C. morbus; and it is stated, upon the best authority, that almost every sudden invasion of disease which proves fatal is classed under the head of C.—a fact which would tend to indicate a careless system of obs. similar to that which in this country so much swells the apparent mort. caused by apoplexy and consumption. It is therefore prob. that some portion of cases not belonging to this class are included under this head, and tend, in some degree, to invalidate the comparison between this Presidency and other countries. *There can however be no doubt that this disease, in its most malignant form, is more general, and recurs more often, in the East Indies than in any other country occupied by Brit. troops.* It attacks both Europeans and natives in greater numbers and with greater severity than in any other country, but not with equal force; for among the natives the admissions amount only to one-third and the deaths to one-half of those which prevailed among Europeans.

In several of the countries occupied by Brit. troops the C. is happily a stranger. Among those in which it has hitherto appeared it has prevailed to the extent exhibited in the following T.; but as it has been only a transient visitor, and its ravages during the short period of its prevalence have been calculated as extending over the whole period examined, during the greater part of which the disease was almost, or entirely, dormant, the statement does not give a correct view of the intensity of the disease during the time of its prevalence. In Nova Scotia and New Brunswick, for instance, the epidemic only prevailed in 1834, when it cut off nearly 39 p. 1000 of the force; but this mort. extended over a period of 20 years makes the ann. average ratio only 1·4 p. 1000. In Canada it prevailed in 1832 and 1834, and the ratio of mort. during the 2 years was 22 p. 1000 of the mean force, although on an average of the whole period it was only 2·1.

Ann. Ratio p. 1000 of mean Strength :				Ann. Ratio p. 1000 of mean Strength :			
	Admis- sions.	Deaths.			Admis- sions.	Deaths.	
Madras Presidency (Europeans)	27	7·6		Nova Scotia and	(Europeans)	5	1·4
" (Natives)	9	4·		New Brunswick }			
Gibraltar " ... (Europeans)	7	2·2		United Kingdom...	(do.)	4	1·2
Canada... (do.)	6	2·1		Mauritius ... (do.)	9	1·1	

... It appears to have occurred [in Madras] in an epidemic form among the European troops at 3 several periods during the 12 years, and to have prevailed at the same time among both classes of troops. The greatest mort. which it occasioned among the European troops was 2·24 p. 1000 of the mean strength in 1832-3; and the greatest mort. among native troops occurred in the same years and amounted to 7·5 p. 1000. In some years it will be seen that the disease was almost entirely dormant. ...

Although the disease is much less prevalent, and causes a less amount of mort., among the native troops, it is greater in intensity, as among that class 1 in 2·2 of those attacked died, and among the Europeans only 1 in 3·6.

The latter, it may be remarked, is almost exactly the same ratio of intensity which has been found to prevail in all the European and American stations in which the disease has of late years made its appearance among the troops, as will be seen in the following extract from the official reports :

In the United Kingdom, 1832-3-4	... 1 in 3·2		Canada, 1832	... 1 in 2·8
Gibraltar, 1834...	... 1 " 3·5		Canada, 1834	... 1 " 2·9
Nova Scotia, 1834	... 1 " 3·5		Honduras (Black Troops), 1836...	... 1 " 3·1

So that neither climate nor treatment appear to have had any effect in modifying the fatality of this disease.

In 1840 also Dr. Robert Cavan, M.D., read before the *Brit. Asso.* at Glasgow a paper : *Vital Statis. of Glasgow, Illustrating the Sanitary Condition of the Pop.*, wherein he furnishes the statistics we have given under date 1832, and many others.

In the *Second Report of a Committee of the Statis. So. of Lond. appointed to collect and inquire into Vital Statistics upon the Sickness among the European and Native Troops serving in the Madras Presidency*, pub. in vol. iv. of the *Journ.* p. 137, occurs the following :

Cholera appears to have been far less prevalent among both classes of troops at Moulmein than in Madras. As however this is a disease possessing somewhat of a periodical character, and the returns from the Tenasserim provinces do not extend over an equal number of years as those furnished from the Madras peninsula, the following results may be liable to modification. Among the Europeans the admissions [into hospital] were 27, and the deaths 7·6 p. 1000, in Madras, and only 6 and 2·8 respectively in the Tenasserim provinces. Among the native troops the admissions and deaths were 9 and 4·04 p. 1000 respectively in Madras, and 0·4 and 0·06 p. 1000 respectively at Moulmein.

In 1841 a paper was read by Major A. M. Tulloch, before the Statis. So. of Lond. : *Comparison of the Sickness, Mort., and prevailing Diseases among Seamen and Soldiers [in the Mediterranean] as shown by the Naval and Military Statistical Reports [Statis. Journ. vol. iv. p. 1]*, in which, under "Epidemic Cholera," we find the following :

The extent of sickness and mort. by this disease in the two forces is shown by the following T. :

Naval Force.—Out of an aggregate strength of 55,709, attacked, 92; died, 22.
Military Force.— " " " of 62,300, " 459; " 131.

Although this epidemic prevailed to so great an extent among the troops at Gibraltar in 1834, and was common also throughout the peninsula in that and the preceding year, it will be observed that the navy suffered comparatively little. The facility of removing vessels from the quarter when the disease originated, so soon as cases began to appear, no doubt contributed greatly to this exemption, as all the attacks occurred in harbour, or in the immediate vicinity of the shore; and the prevalence of the disease was checked on putting to sea.

From the above statement of the number of attacks and deaths by C. in the naval and military force respectively, the proportion of recoveries appears to have been greatest among the former, in the proportion of 1 in 4½ to 1 in 3½; but it seems rather doubtful whether 33 of the cases which occurred on board the *Castor*, when lying off Santaner, were of genuine Asiatic Cholera, as only 3 terminated fatally, and the symptoms were comparatively mild. *Deducting these, the proportion of deaths to recoveries would be precisely the same in both services, viz. 1 in 3½.*

In a paper read before the Statis. So. in 1841 by Charles Barham, M.B. Cantab.,

Physician to the Cornwall Infirmary, etc., *Remarks on the Abstract of the Parish Regis. of Tavistock, Devon*, there occurs the following [vol. iv. p. 37]:

The Cholera, however, though twice or three times introduced, did not take root, nor spread beyond the person first attacked; an exemption the more remarkable, as the neighbouring town of Plymouth was most severely visited by this scourge; and as the situation of Tavistock, on a river which empties itself into Plymouth harbour, is such as has in other instances apparently favoured the spreading of the disease. The dreadful havoc caused by the Plague in 1626 serves to show that a similar immunity to that recently enjoyed cannot be counted on if another pestilence should occur.

A paper was read before the Statis. So. in 1844 [vol. viii. p. 83], by Dr. J. Graham Balfour, M.D., *Comparison of the Sickness, Mort., and Prevailing Diseases among Seamen and Soldiers, as shown by the Naval and Military Statistical Reports*. This was based upon a later Report of the Health of the Navy than that reviewed by Major Tulloch in 1841. This present report comprised: 1. The Cape of Good Hope, Western Africa, and the Mauritius. 2. The East India command. 3. The Home and various forces. His remarks and comparisons were confined to the second head, for reasons stated in the paper. Under "Epidemic Cholera," the following T. is given:

NAVAL FORCE.		MILITARY FORCE.	
Out of an Aggregate Strength of 12,942		Out of an Aggregate Strength of 14,590	
Attacked.	Died.	Attacked.	Died.
220	31	344	107
Ratio 17	2.4	24	7.3

The author says: This disease has proved more prevalent and fatal among the military than among the sailors, and the proportion of deaths to cases has also been higher. Dr. Wilson, however, states his opinion that some cases of common C. have been included, which seems prob., as in 1835 we find 21 admissions recorded and no deaths. C. being an endemic disease in India, although prevailing occasionally as an epidemic, it was naturally to be expected that the troops would suffer more from it as being more exposed to endemic influences. In 1832 it raged with great violence at Colombo and Trincomalee, cutting off nearly one-fifth of the white troops at the latter station, while only 9 cases occurred among the sailors in the harbour there, of which three terminated fatally; and throughout the rest of the command there were but 15 attacks and 1 death recorded.

In 1845, the C. was epidemic at Cabul, which from 1839 to 1842 had been the seat of war, and the scene of great triumphs and disasters.

In the summer of 1846 a form of disease prevailed in Lond. which has been designated in the U.S. Bills of Mort. *Cholera infantum*. The disease here proved fatal to many old people. The Reg.-Gen. says adults died of attacks which could not in their symptoms be distinguished from Asiatic C. "It was, however, quite evident from the first, that the epidemic had not the character of that malady which broke out here in the winter of 1832, but was closely allied to the C. described by Sydenham." [See 1669.] The mort. of the year was very heavy; and the epidemic was apparently as fatal in inland towns as in ports. In Lond. 228 deaths were referred to C., and 2152 to diarrhoea.

In Bombay epidemic C. prevailed in the spring of the year, and a part of the army of Scinde, at Kurrachee, was assailed by the disease in its most fatal forms. It acquired great force about the Indus. From Affghanistan, the Punjaub, and Scinde, the epidemic extended later in the year over Persia and Syria.

In a paper read before the Brit. Asso. in 1846 by the late Col. Sykes: *Statistics of the Gov. Charitable Dispensaries of India, chiefly in the Bengal and North-Western Provinces*, a letter by Dr. S. Davis respecting the inhabitants of Patna is quoted, and the passage contains the following:

During the 8 years of my residence I have seen several severe visitations of C. and remittent fever, the former usually making its appearance at the commencement of the hot winds. There is often in April and May an indescribable but well-understood state of the atmosphere, accompanied with variations in the wind, and a hazy and sultry appearance that is favourable to the production of the former very frightful disease. During such weather you find vegetation blighted by impalpably small animalculæ, which elude the perception of the naked eye, but are easily discerned by the aid of microscopic instruments.

I have long thought that C. and some other diseases have their origin in animalculine blight, and late writers have brought together so many facts bearing on the subject, that this opinion gains ground with me daily, nor is the circumstance of diseases spreading more in crowded cities than in smaller localities at all contrary to this theory, since there are so many more points of attraction or deposit.

In 1846 Dr. Allan Webb pub. in Calcutta, *Pathologia Indica; or, the Anatomy of Indian Diseases, based upon Morbid Specimens in the Museum of the Calcutta Medical College*, in which work much information is given concerning the early hist. of C. in India.

In June, 1847, the C. prevailed at Astrakhan, at the mouth of the Volga, on the Caspian Sea. By Sept. in that year it had reached Moscow.

The Reg.-Gen. in his report on the public health for the third quarter of 1847 said: The great historical epidemics have diminished in intensity; and there appears to be no reason why they should not be ultimately suppressed with the advance of the pop. amongst which they take their rise. Their origin is obscure, but influenza appears generally to have become first epidemic in Russia, C. in India. *It is in India that the source of the latter disease must be attacked.* If the health of

India become sound, Europe might be safe and hear no more of the epidemic which is now traversing Russia. The attention of the Indian authorities has been for some time directed to the subject. . . . *Asiatic Cholera has taught us that the lives of thousands in England may depend on the condition of the Pariahs of Jessore.*

In 1847 the late Col. Sykes communicated to the Statis. So. of Lond. a paper, *Vital Statistics of the East India Co.'s Troops in India, European and Native*, and the same is printed in vol. x. of its *Journ.*, p. 100. The subject is treated under three divisions. 1. The Vital Statis. of the Bombay Native Army at every age from 20 to 52 for the years 1842, 3, and 4. 2. The Vital Statis. of the Indian Army, European and Native, from 1825 to 1844, both inclusive. 3. The Vital Statis. of the Prison Estab. of the Native Armies of the three Presidencies. All the more material facts, as deduced from these returns, are presented in tables prepared by Mr. F. G. P. Neison. The author of the paper, reviewing the results of the Tables, says :

Another important result from the compilation of this paper is the necessary removal of all rational grounds for the panic terror which has hitherto obtained respecting the intensity and extent of that assuredly very shocking malady Asiatic Cholera. In consequence of the unexpectedness with which the disease appears in certain localities, the devastations it commits, sparing neither age nor sex, the robust nor the feeble, the daring nor the timid, the unthinking and the alarmist are led to characterize these local manifestations as types of the general operation of this appalling disease; but when we calmly cast our eyes over the mort. T. of the whole Indian army, whose ann. average strength for 20 years was 12,028 Europeans, and 194,082 natives, we find that the ann. average loss from C. for 20 years was :

Europeans.						Natives.					
Bengal	...	...	...	...	51	Bengal	...	...	...	...	224
Madras	...	...	...	...	22	Madras	...	...	...	...	348
Bombay	...	...	...	...	14	Bombay	...	...	...	...	90
Total for India					87	Total for India					662

The European troops losing in fact only 0·724 p.c. p.a., and the native troops only 0·342 p.c. p.a. The maximum intensity of the C. was only 2·13 p.c. in 1843 in 20 years; and amongst the native soldiery during that period the maximum intensity scarcely exceeded the half of that amount. . . .

Another fallacy which these T. dissipate is the asserted superiority of the European over the native soldier in the power of rallying from its effects when attacked. The European, it is said, is a robust man than a native; his fibre is more rigid, and his stamina stronger; the native being comparatively feeble and washy from his habits of life, and from the insufficient nourishment of his farinaceous or vegetable food. Now the T. show the very reverse to be the case. In no year whatever, under the Bengal Presidency, has the per-centage rate of mort. from C. of the native troops approached that of the Europeans; nearly the same may be said of the Bombay C. mort. At Madras there is a difference, the mean mort. of the natives from C. being rather more than a half p.c. p.a., and that of the Europeans rather less than a half p.c. p.a. This I shall endeavour to account for when speaking of the prob. causes operating upon the health of the troops of the three Presidencies, European and Native. The final results of C. mort. as already shown are, for the European troops of all India, 0·724 p.c.; and for the natives, 0·342 p.c. p.a. [INDIA.]

In the *Edin. Medical Journal* for Jan. 1847 there was pub. by Dr. Begbie, a Report embracing 30 years' mort. experience of the *Scottish Widows Fund*, in which some details as to deaths from C. are given; but as some subsequent Reports were pub., we shall speak of them all under date 1860.

In 1848 Surgeon F. P. Strong, of the Bengal Army, prepared a Report to the Bengal Gov. *On the Mort. in the Jails of 24 Pergunnahs, Calcutta*. An abstract of this report was read before the Statistical So. of Lond. in 1848 by Col. Sykes; and this abstract is pub. in vol. xii. of the *Journ.*, p. 48. Therein we find the following :

The second return of Asiatic Cholera to our shores, after an absence of 16 years, gives considerable interest to the most complete T. of C. statistics for 31 years from 1817, the date of its first record in Calcutta, to 1847, inclusive, that has hitherto been compiled. . . . The return embraces the number of prisoners, the number of C. sick, and the number of C. deaths, for every month of every year from 1817 to 1847, both inclusive. The first striking feature of the T. is that there is not any *one year* of the whole series in which there was not C. in the jails; and, what is equally remarkable, with exceptions to be mentioned, there was not any *one month* of any year in which the C. was not present among the prisoners. . . . The disease therefore took its place with the ordinary diseases to which man is subject in India at all times—dysentery, fevers, liver, spleen, and all the ills flesh is heir to, and yet the average mort. from C. to the strength, for 31 years, was exactly 1 p.c.; the average mort. from all causes for 27 years being 7·11 p.c. in the jails of the 24 Pergunnahs, while the mort. in Calcutta for the same period was 4·64 p.c. Here we have a most important and consolatory fact, the disease permanently located within the walls of prisons, under the most favourable circumstances for its development and spread, from the constrained juxtaposition of parties, produced only 6531 cases in 31 years to an ann. average strength of 1863, or about 11½ p.c.; so that, whether the C. be contagious or be not contagious, *only 1 in 9 persons was susceptible of taking the disease, when constantly exposed to its influence, and only one-eleventh of those who took the disease died*; the average loss of those treated for 31 years being 8·86 p.c.

The following Reports were also pub. in 1848: (1) *Reports on Asiatic C. in Regiments of the Madras Army, 1828-44, with Summary of its Treatment in India*, by Samuel Rogers; (2) *Report of the Sanitary Committee of N. Y. on the Asiatic C. at Staten Island (N. Y.)*.

In June, 1848, C. prevailed in St. Petersburg and Berlin; by Sept. it had reached Hamburg; in Oct. it was at Edinburgh. It is thus seen to have followed much the same course as in 1830-31. The Board of Health showed this clearly by the following simple diagram :

Astrakhan	...	...	...	July, 20, 1830	...	...	...	June, 1847
Moscow	...	...	...	Sept., 1830	...	...	...	Sept. 18, 1847
Petersburg	...	...	...	June 26, 1831	...	...	...	June, 1848
Berlin	...	...	...	Aug. 31, 1831	...	...	...	June, 1848
Hamburg	...	...	...	Oct., 1831	...	...	...	Sept., 1848
Sunderland	...	...	...	Oct. 24, 1831	...	...	...	Oct. 4, 1848
Edinburgh	...	...	...	Jan. 22, 1832	...	...	...	Oct. 1, 1848

The Reg.-Gen. in his first quarterly report for 1848 pointed out that there was "a very remarkable improvement in the state of the public health." In his second report, "There is as yet no trace of the epidemic of C, which is ravaging Russia from Moscow to St. Petersburg, and is ascending the Danube." In the 3rd quarter of the year the mort. was declared to be below the average, "the improvement in the public health is considerable in all the divisions except Lond." For the 4th quarter the mort. was "below the average." Yet in Oct. the presence of Asiatic C. made itself distinctly known, and during the year no less than 1934 deaths were referred to C. ; 829 in the first nine months, and 1105 in the last three. Dr. Farr says [*Report on Mort. of Cholera in England, 1848-9*] :

The former were generally considered cases of common English C.; many of them were universally held to be "Asiatic" C. *The two forms are often not distinguished in the returns.* The cases separately considered run so insensibly into each other, that the attempt at distinction would have been fruitless. They differ perhaps in fact no more than distinct and confluent smallpox, simple and malignant scarlatina, simple and phlegmonous erysipelas, which are properly held to be varieties of the same maladies. Without entering into any disquisition in pathology, it is also necessary to notice here the connexion of diarrhoea and sporadic C. with Asiatic C. [See DIARRHOEA.]

The year 1849 opened with severe epidemic C. too firmly implanted in Gt. Brit. The deaths in England in Jan. were 658; in Feb., 371; in March, 302. The circumstances were equally remarkable with those of the preceding year. The Reg.-Gen. said in his first quarterly return, "Although epidemic C. has been in England since Oct. 1848, and has prevailed more or less up to the present time in parts of the country, the general mort. has been and is considerably below the average. This is encouraging, and should stimulate all sanatory improvements; for summer is the season in which the epidemic is to be most dreaded." In April the epidemic very much subsided, and only 107 deaths were referred to C. in England. In May the deaths were 327; but the fatal period set in during that month in Liverpool, and went on through June, during which month the deaths were 2046 in all England. South Wales was now suffering, and the epidemic had greatly increased in Lond. With the advance of the heat of summer, the epidemic increased alarmingly, until, in the month of Sept., the deaths reached 20,379. It reached its highest point on the 5th and 6th of that month, when the mort. was respectively 1120 and 1121. It had sensibly decreased by the 11th Sept. The maximum day in South Wales was 11th Aug.; in Lond. 4th Sept. The decline of the mort. was very rapid. The mort. in Oct. was very much confined to the S. and N. Western Divisions of England.

D. was more fatal than C. in the early months of the year. In the middle and autumn of the year it was the reverse. At the close, D. was again in the ascendant. The following T. of the monthly progress of these almost twin diseases will be useful for future reference :

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Cholera ...	658	371	302	107	327	2046	7570	15,872	20,379	4654	844	163
Diarrhoea ...	810	698	708	666	721	926	2124	3599	4928	2244	871	592
C. and D.	1468	1069	1010	773	1048	2972	9694	19,471	25,307	6898	1715	755

The following T. compares the intensity of the mort. month by month during the visitations of 1831-2 and 1848-9; but it must be always remembered that the returns for the former period were prob. defective, as already pointed out.

DEATHS IN ENGLAND FROM CHOLERA DURING EACH MONTH THE EPIDEMIC REIGNED IN ITS TWO EARLY VISITATIONS.

Months.	Deaths from Cholera in England.		Of the Total Deaths from Cholera, the proportion p.c. in each month.	
	1831-2.	1848-9.	1831-2.	1848-9.
1831-1848.				
October	?	354	?	·651
November	97	376	·314	·691
December	282	375	·912	·689
1832-1849.				
January	614	658	1·986	1·210
February	708	371	2·289	·682
March	1519	302	4·912	·555
April	1401	107	4·530	·197
May	748	327	2·419	·601
June	1363	2046	4·408	3·761
July	4816	7570	15·574	13·916
August	8875	15,872	28·699	29·178
September	5479	20,379	17·718	37·463
October	4080	4654	13·194	8·555
November	802	844	2·593	1·552
December	140	163	·453	·300
Total	30,929	54,398	100·000	100·000

The following Tables present some points of interest :—

I.—DISTRICTS AND TOWNS WHICH SUFFERED MOST SEVERELY FROM THE CHOLERA EPIDEMIC OF 1849, ARRANGED IN ORDER OF THE RATE OF MORT. EXPERIENCED :

Districts, etc.	Deaths Regis.	Deaths to 10,000 pop.	Districts, etc.	Deaths Regis.	Deaths to 10,000 pop.
Merthyr Tydfil ...	1682	251	Portsea Island & Alver-	694	83
Sculcoates & Hull	1834	200	stoke		
Salisbury	165	185	Bristol and Clifton ...	1154	82
Plymouth, E. Stone-			Plympton St. Mary ...	151	77
house, and Stoke }	1722	177	Abergavenny	438	76
Damerel			Wigan... ..	563	76
Neath	738	166	Cockermouth	282	74
St. Germans... ..	236	143	Bedminster	281	74
Wolverhampton ...	1365	138	Southampton	210	74
Liverpool and West }	5308	136	Selby	112	73
Derby			Bridgewater	235	71
Tynemouth	815	132	Teesdale	138	70
Hunslet and Leeds	2323	125	Alnwick	142	69
Gravesend	196	119	Romford	163	68
N'castle-under-Lyne	241	117	Chester-le-Street ...	134	66
Gainsborough ...	246	91	London	14,137	62
Cardiff	396	84	Newport	246	60

[These numbers will be found to differ in some respects from the figures given in the Special C. Report pub. 1852—the calculations in that Report having been made prior to the Census of 1851.]

II.—DISTRICTS IN WHICH THE CHOLERA WAS GREATER IN 1849 THAN IN 1832.

Place or District.	1832.		1849.	
	Pop. 1831.	Deaths from Cholera 1832.	Pop. 1851.	Deaths from Cholera 1849.
London	1,424,896	5275	2,361,640	14,137
Portsmouth.....	46,283	86	72,676	568
Bristol and Clifton	132,331	694	143,704	1154
Shrewsbury	21,277	75	23,095	116
Wigan	20,774	30	77,545	563
Liverpool	165,175	1523	255,055	4173
Leeds, etc.	123,393	702	189,987	2323
Hull	28,591	300	50,552	1178
Merthyr Tydfil	22,083	160	76,813	1682

III.—DISTRICTS IN WHICH THE MORT. FROM C. WAS LESS IN 1849 THAN IN 1832.

Exeter.....	28,201	347	32,810	44
Plymouth	31,080	702	52,223	830
Gloucester	11,933	123	32,062	119
King's Lynn	13,370	49	20,528	2
Norwich	61,110	129	68,196	38
Nottingham	50,680	296	58,418	18
Sheffield	59,011	402	103,602	114
Carlisle	20,006	265	41,566	51
Newcastle-upon-Tyne ...	42,760	801	89,145	295
Sunderland.....	17,060	215	70,561	363

It is important to bear in mind that in abstracting the cases of 1849 for the purposes of Dr. Farr's special *Report on the Mort. of Cholera in England in 1848-9*, all cases returned as "Cholera" (whether English or Asiatic), choleric, "bowel complaint," and diarrhoea simply, or as a complication of other diseases, were transcribed. All the cases in which the term "Cholera" or "Choleraic Diarrhoea" occurred were referred to Cholera. About 300 cases, in which diarrhoea was evidently a symptom of consumption, or some other disease, were struck out ; the residue of the cases was classed under Diarrhoea.

The small general mort. of the year 1849 led, perhaps not unreasonably, to a surmise that the mort. from C. did not over a series of years disturb the average rate of deaths in the pop. In other words, it was thought prob. that those who were attacked by C. were debilitated lives, that would have died from some other cause within a very short period. Further obs. has shown that this theory cannot be upheld in its entirety. It does, however, appear that the deaths from C. do not augment the deaths of the entire pop. to the extent of those ascribed to C. itself ; hence there is a set-off somewhere. This is prob. found in the increased care taken by a large number of persons. The subject will be rendered more clear by reference to a T. given under DEATH RATE.

In the C. epidemic in 1849, the deaths of 7436 females against 6701 males occurred in Lond. This led to an inference that C. might be more fatal to females than males—not a very unreasonable assumption, when their being confined within the close precincts of their houses, and hence exposed to the choleraic poison of their house-drains, is considered. But subsequent investigation has dispelled the belief. Various other facts bearing upon this point will be mentioned as we proceed.

A noticeable feature of the outbreak of 1849 occurred in the district of Church-lane, St. Giles's. While the mort. among the poor Irish families in the "rookery" there was very considerable, not a single case occurred among the larger pop. in buildings of the Metropolitan So. in that locality. A similar result was observed in other model blocks of labourers' and workmen's dwellings.

A very severe visitation of C. occurred in the district of Plympton St. Mary, Devonshire, in 1849. It first broke out on the 11th May; it had disappeared generally by the early part of Sept.; and by the end of Oct. had altogether disappeared. Mr. A. C. MacLaren was sent down by the Gov. Inspector of Cholera to watch the progress of this outbreak, which was regarded as "a most exquisite instance of epidemical severity." The result of Mr. MacLaren's obs. are given in vol. xiii. of *Statis. Journ.* [p. 103], *On the Origin and Spread of Cholera in the 8th District of Plympton St. Mary, Devonshire*,—a paper of great completeness of detail. We must be content with one passage only:

The periods of life *most liable* to attack and death were those under 10 years of age; next, between 30 and 40, and 50 and 60. The periods *most liable* to attack were those over 60, and between 10 and 20 years of age. The periods of *least mort.* in relation to attacks by diarrhoea and C. were those between 40 and 60, and 10 and 20 years of age. The periods of *greatest mort.* in ratio to attacks by diarrhoea and C. were those over 60 years of age; next, under 10; and next, between 30 and 40 years of age.

In 1849 Dr. John Snow, M.D., pub. a work, *On the Mode of Communication of Cholera*, which attracted a good deal of attention, and passed through several eds. The following is an outline of the theory promulgated:

The C. commences as an affection of the alimentary canal, and not with general illness; there is no evidence of poisoning of the blood in this disease, except in some cases where secondary fever occurs; there is conclusive evidence that C. may be communicated from person to person, and it follows, therefore, that the morbid matter which produces the disease is applied to the interior of the alimentary canal, where it increases and multiplies during the period of so-called incubation, and passes off during the attack, to cause fresh cases when suitable opportunities occur. Various circumstances connected with the propagation of C. seem in accordance with the above view of its pathology. Thus it was observed to pass frequently from person to person in crowded habitations of the poor, who eat, drink, cook and sleep in the same apartment, and pay little or no regard to cleanliness; who live, in fact, under circumstances where the sudden and copious evacuations of C. . . . would not fail to contaminate. . . . It occurred to me, as soon as I began to entertain the above opinion, that if the C. excreta could produce the disease in the way just mentioned, they might also do so when diffused in water taken as drink; and that, unless this were the case, the whole of the phenomena of C., as an epidemic, could not be explained.

Subsequent investigation has confirmed this theory, which has now come to be admitted by nearly all the leading authorities. *Cholera becomes epidemic through the medium of our water supply.* Dr. Farr says:—"Dr. Snow's theory turned the current in the direction of water, and tended to divert attention from the atmospheric doctrine, which in Lond. has received little encouragement from experience."

In 1849 there was pub.: (1) *Report on the Nature of the Microscopic Bodies found in the Intestinal Discharges of Cholera*, by the Sub-Committee of the Royal College of Physicians; (2) *Instructions Sanitaires sur les moyens préservatifs du Choléra Morbus* (Paris); (3) *Obs. on the Epidemic Cholera of 1848-9, chiefly as it prevailed in the 13th Medical District of the City Parish, Glasgow*, by James Maxwell Adams.

It was in this year also that Dr. Budd, of Bristol, announced that he had discovered microscopic "fungi" in the water used for drinking when C. prevailed. About the same period Dr. Brittan and Dr. Swayne also pub. an account of certain "annular bodies," or "Cholera cells." While Prof. Mitchell, of Philadelphia, announced a similar theory. These discoveries are believed to have been all independently made; and they demonstrate the large amount of scientific investigation which was being bestowed upon the subject.

The effect of C. visitations upon the mort. of insured lives is a subject which would naturally engage attention. The first return throwing any especial light upon the subject was, we believe, that of the *Gotha So.* Its report for 1838 contained an abstract of the causes of death for the ten years 1829-38, arranging the diseases according to a general and popular form of classification. The report of the same So. for 1848 contained a similar abstract for the 20 years 1829-48. The first report showed that during the period it embraced the deaths from C. were but 12; of which 2 occurred between the ages of 31 to 40; 5 between 41 and 50; and 5 between 51 and 60, all inclusive. The deaths from C. in the second period were 29; of which 4 occurred between the ages 31 to 40; 12 between 41 and 50; 9 between 51 and 60; and 5 between 61 and 70, all inclusive. Mr. F. G. P. Neison, in a paper read before the Brit. Asso. at its meeting in Edin. in 1850, *Mort. of the Provident Classes in this Country, and on the Continent*, deals with these reports, but also adds to them a return of 31 deaths from C. experienced by the same office in 1849. Placing all these deaths together—making 60 in the whole—and

viewing them in relation to the number of lives exposed to risk, of which he had obtained a return from the So., he constructed the following T. :

Ages.	Lives exposed to risk.	Deaths from Cholera.	Mortality p.c.	Being 1 death in
31—40	33,870	7	·021	4762
41—50	47,010	15	·032	3125
51—60	31,050	18	·058	1724
61—70	12,382	17	·137	730
71—80	1,719	3	·175	571
Totals ...	126,031	60	·048	2083

He remarks, "In reference to age, it will be seen that the largest number of deaths have taken place between ages 51 and 60, but the rate of mort. has gone on increasing from the youngest to the oldest age. . . . A similar law has always been observed elsewhere, although within epidemic periods the mort. must of course be greater than shown in the above T. A few deaths have taken place at intervals throughout the whole period ; but if the year of the principal epidemic be considered, viz. 1849, the rate of mort. will appear much increased." This is shown as follows :

Ages.	Lives exposed to Risk.	Deaths from Cholera.	Mortality p.c.	Being 1 death in
31—40	3656	3	·084	1188
41—50	5766	3	·052	1922
51—60	3060	10	·327	306
61—70	1653	12	·726	138
71—80	341	3	·880	114
Totals ...	14358	31	·215	464

This is found to be much under the rate for the whole of Paris in 1832, or for Lond. in 1849, as shown by the following T.

Ages.	Gotha Life Office, 1849.		Paris, 1832.		London, 1849.	
	Per cent.	1 in	Per cent.	1 in	Per cent.	1 in
31—40	·084	1186	2·213	45	·661	151
41—50	·052	1922	2·796	36	·830	120
51—60	·327	306	3·577	28	1·243	80
61—70	·726	138	5·324	19	1·726	58
71—80	·880	114	8·787	11	2·182	46
Totals ...	·215	464	3·776	26	·962	104

Hence the mort. of the *Gotha* within the ages 31-80 was 1 in 464 ; while in Paris it was 1 in 26, and in Lond. 1 in 104.

The Board of Health, in its Report dated 14th Aug., 1850, says, regarding the epidemic of 1848-9, "The late extended experience has shed no light on the primary or proximate cause of this pestilence ; . . . that remains involved in the same impenetrable mystery as ever." They affirm, however, that the "disease is not, in the common acceptation of the term, contagious, but spreads by an atmospheric influence ; its progress consisting of a succession of local outbreaks."

In 1850 C. visited the Island of Jamaica for the first time. It occurred in the autumn of the year, and it was estimated that 50,000 persons died from it. This led to the pub. (in 1853) of *Report on the Cholera in Jamaica, and the Sanitary Condition and Wants of that Island*.

In 1850 there was pub. *Reports of the Origin and Progress of the Pestilential Cholera in the West Yorkshire Lunatic Asylum, Autumn of 1849*, by Dr. T. G. Wright ; and in the same year, *Hist. of the Cholera in Manchester in 1849, as reported to the Reg.-Gen. of Births and Deaths*, etc., by John Leigh and N. Gardiner, Sup.-Regis. of Manchester.

In 1851 Dr. James Stark, M.D. [now medical officer in the department of the Reg.-Gen. for Scotland], read before the Statis. So. of Lond. a paper, *Contributions to the Vital Statistics of Scotland*. This paper is printed in vol. xiv. p. 48 of the *Journ. of the So.* The author, after showing the mort. of the different towns of Scotland for a series of years, as deduced from the latest returns, says :

On the Continent it has generally been remarked that the C. more than doubled the ann. mort., and in every case caused the mort. of the year during which it prevailed to rise high above all previous

years. Such has not been noticed to the same extent in Scotland, severe as C. was, and destructive as were its ravages. In Edin., in Glasgow, in Dundee, and in Paisley, the mort. during 1847, the year of epidemic typhus fever, greatly exceeded that of the year or years when C. raged. Thus C. raged in Edin. in 1848-9; but the typhus fever epidemic caused the mort. of 1847 to exceed that of 1848 by 1231 deaths, and that of 1849 by no fewer than 1899 deaths. In Glasgow again the typhus fever epidemic caused the mort. of 1837 to exceed that of the C. year 1848 by no fewer than 5606 deaths, and also to exceed the mort. of the C. year 1849 by no fewer than 5850 deaths. Dundee and Paisley, though both very smartly handled by the C., exhibited the same remarkable fact. . . .

In 1852 there was issued from the office of the Reg.-Gen., and from the pen of Dr. Farr, *Report on the Mort. of Cholera in England, 1848-9*,—a most exhaustive vol., from which many of the preceding details are drawn.

In 1852, also, Dr. William Farr read before the Statistical So. a paper on the *Influence of Elevation on the Fatality of Cholera*. The paper is printed in the *Journal* of the So. [vol. xv. p. 155]. It deals with one of the more practical results presented in the special report of this year, already noticed, viz. the influence of locality—particularly of elevation of habitation—on the diseases and characters of men. Here are some of the results:

By collecting the districts together in which the mort. was high we find this striking result, that 46,592 of the 53,293 deaths from C. in the year 1849 occurred in 134 of 623 districts; or in less than a seventh part of the area of E. and W. among four parts in ten of the pop. Only 6701 deaths took place out of 10,000,000 of people on 49,228 square miles of territory. In 85 districts of E. and W. no death from C. was regis. in 1849; not a single death from either C. or diarrhoea was regis. in 12 of those districts. The only town of any magnitude in the 85 districts is Hereford. The other districts are made up of villages or small towns. In the county of Hereford only one death from C. was regis. in 1849. This county lies high up the river Wye; the pop. is scattered, and engaged in agriculture: it is out of the line of railways. The common drink of the people is cyder. A straw-bonnet maker, aged 27, died of C. in Kirby Stephen, on July 26, 1849—it was the only death from C. in Westmoreland. The 85 districts which escaped the epidemic C. in 1849 lay in general high, round the sources of rivers, and were thinly peopled. 13 in 208, or 6 p.c. of the districts on the coast escaped, while 72 in 415, or 17 p.c. of the inland districts enjoyed immunity.

The following T. illustrates the mort. from Cholera in the Inland and Coasts districts :

	Pop. 7 June 1841.	Pop. 31 March 1851.	Deaths from Cholera 1849.	Deaths from Cholera to 10,000 persons living 1849.
England and Wales.	15,914,148	17,922,768	53,293	30
415 Inland Districts.	9,478,050	10,433,333	17,652	17
208 Coast Districts.	6,436,098	7,489,435	36,241	50

Thus it appears that the Cholera was *three times more fatal on the coast than in the interior of the country*. The learned writer proceeds :

The character of the coast varies, and by a further analysis it is found that the fatality of C. on the coast was greatest in the chief seaport districts. Thus 26,773, or more than half the deaths in the country from C., happened in the districts of or about Lond., Liverpool, Hull, Bristol, Plymouth, Portsmouth, Southampton, and Tynemouth. Lond., having a mixed character of a seaport town and an inland city, may, for the present, be set aside: we have then 3 groups of coast districts. The mort. in the great ports was at the rate of 125 in 10,000 inhabitants; in the 125 coast districts with small ports, often inaccessible to ships, the mort. in 10,000 was only 15; which is one-eighth part of the mort. in the great, one-third of the mort. (47) in the secondary ports.

Cholera, we are told, reigned wherever it found a dense pop. on the low alluvial soils of rivers; round the estuaries of the Thames, the Humber, the Mersey, the Severn, the Tamar, and their tributary waters. Certain cities and towns lie on the same rivers at different elevations, and are intimately connected; the one is the port and entrepôt; the other the manufacturing seat and centre of the surrounding country. Liverpool, Manchester, and other districts are thus related. It was found that C. prevailed at both extremities of the connecting line; but that it was almost invariably most fatal in the port of the district lying lowest down the river.

For the purposes of more complete obs. two large groups of districts were thrown together: (1) the 47 districts on the river and sea margins, which comprise the principal ports except Lond.; (2) 41 of the large town districts in the interior of the country, seated also on rivers, but nearer their sources and at higher elevations. The inland districts are more densely pop. than the maritime districts; and the mort. in ordinary times, high in both regions, was highest in the inland towns. Yet the C. in the low sea-side districts destroyed 85 in 10,000 of the inhabitants, while in the inland towns it was fatal to 38 in 10,000 of the inhabitants. The fatality was as 2½ to 1. The metropolis, with its mixed pop., experienced an intermediate mort.—62 in 10,000 of the inhabitants died of C. The mort. from C. in the rest of the kingdom, on smaller streams and higher ground, was at the rate of only 12 in every 10,000. The mort. from diarrhoea was found to be about the same in these last districts as in the town districts. The want of exact data as to the elevations of certain districts limited the obs. in some respects.

The elevation of the soil in Lond. has, we are told, a more constant relation with the mort. from C. than any other known element. The mort. from this epidemic is in the inverse ratio of the elevation. The mort. in the 19 highest districts was at the rate of 33 in 10,000, and of the 19 lowest districts 100 in 10,000. The mean elevation in the two groups was as 71 to 10 feet above the high-water mark of the Thames, or as 7 to 1; while the mort. was as 1 to 3, or in the inverse ratio. In the two groups of the

6 districts supplied with the water of the Thames at Kew and Hammersmith, the mean elevation was 35 and 175 feet; the mort. from C. was 19 and 11 in 10,000. In the two groups of 12 districts supplied with the Thames water between the Battersea and Waterloo Bridges, the mean elevations were $\frac{1}{2}$ foot and 10 feet; the mort. 168 and 77 in 10,000. In the two groups of 20 districts supplied with the waters of the New River and the Lea, the mean elevation was 24 and 59 $\frac{1}{2}$ feet; the mort. from C. was 59 and 37. "While (says Dr. Farr) the effects of the water and of the wealth of the districts are apparent, they do not, in this analysis, conceal the effects of the elevation." He asks, Why is the C. fatal in low places? and answers the question as follows:

C. has not only been most fatal in the low, and least fatal in the high, parts of the country but the fatality has diminished proportionably as the dwellings of the pop. have been raised above the sea-level. The epidemic began and was most fatal in the ports on the coast; and in ascending the rivers step by step, we saw it grow less and less fatal. This made it prob. that a certain relation existed between elevation and the power of the C. to destroy life. The more exact information which we possess respecting the Lond. districts estab. this connexion beyond doubt. The relation may not be expressed by the same figures in other places, or in Lond. at other times, but it will always be the general rule that the *mort. of C. is inversely as the elevation of the people assailed above the sea-level.*

Mere *density of pop.* has not, we are told, the same direct effect of increasing the mort. in this disease as in others; for in many inland towns and in high dense parts of Lond. the mort. was slight or inconsiderable. Neither does the mort. from C. vary in the Lond. districts in any ratio of density. Still density and numbers of the people are not to be lost sight of; for the cholera was not fatal to many inhabitants of thinly-populated though low and marshy parts; while in such localities it was very fatal in nearly all towns. *The law is that the mort. in towns of some extent and density is inversely as the elevation.*

There are one or two other notable incidents to be mentioned. Cholera attacked the greater part of the districts on the coal-fields of England, and was most fatal in the denser masses of the mining pop. Dr. Farr says: "The ground on the coal-formation may have lent the epidemic fatality." [MINERS.] A few scattered cases occurred in the marshy districts of Lincolnshire; but the mort. was inconsiderable. The marsh districts in the interior of Cambridgeshire also escaped down to the Ely district; North Witchford, Whittlesey, and Wisbeach suffered. So did some of the marsh districts of Essex and Kent, on the estuary of the Thames. In the Romney marsh district only one death from Cholera occurred.

Finally we arrive at the learned Doctor's generalization of this portion of his subject, which goes to this extent: that the cause of Cholera is some chemical modification of organic matter; and—here is the great practical fact—*that although elevation of habitation, with purity of air, and purity of water, does not shut out the cause of C., it reduces its effects to insignificance.*

We shall have to return to this important paper under other heads. [FEVERS.] [LOCALITY.] [PLAGUE.]

Between 1850 and 1852 there was pub., *Report of the General Board of Health on the Epidemic C. of 1848-9, with three Appendixes.* There was also pub. in 1852, *Report on the Epidemic C. in Germany in 1852*, by R. D. Grainger.

In 1853 Sweden, Norway and Denmark suffered severely from the Cholera. Between June and the middle of October no less than 15,000 persons died.

At the meeting of the Brit. Asso. held in Hull in 1853, Dr. Henry Cooper, M.D., read a paper: *On the Cholera Mort. of Hull during the Epidemic of 1849.* In this borough the mort. on this outbreak was at the rate of 241 deaths to every 10,000 of the pop.; while in the adjoining parish of Sculcoates it was at the rate of 152 to every 10,000. The Reg.-Gen. stated that Hull, in proportion to its pop., suffered more severely than any town in the kingdom. The total deaths were 1860—males 885, females 975—being at the rate of 1 in 43.01.

The Reg.-Gen. said in his 12th Report (1853):

C. is a disease well calculated to excite alarm by its wide, well-marked march over the world, the suddenness of its invasions, the sufferings it awakens, the fatality of its attacks, the helplessness of medicine, and the hopelessness of its victims. But it cannot be denied that the epidemic of C. in 1832 aroused the attention, and led the way to sanatory inquiries and ameliorations, which, however imperfect, have saved more lives than C. destroyed. For C. is a health inspector that speaks in language which nobody can misunderstand; it visits the prisoner in the hulk on the polluted river, the neglected lunatic in his cell, the crowded workhouse, the estab. for pauper children, the sides of stagnant sewers, the undrained city, the uncleansed street, the cellar and the attic; as well as the fair open quarters which strangers frequent and admire. The oversights, the errors, the crimes, of persons who in responsible offices have charge of the health and life of men, are proclaimed aloud by this inexorable voice.

It was in the autumn of 1853 that the following incident occurred. The Presbytery of Edin. recommended as an infallible specific for C. the expedient of fasting and humiliation. Lord Palmerston was at the time Home Sec. It fell to his lot to direct the correspondence. He caused a letter to be addressed to that devout body, to the effect that the affairs of this world are regulated by natural laws, on the observance of which the weal or woe of mankind depends. One of those laws connects disease with the emanations from bodies, and it is by virtue of this law that infection spreads in crowded cities, and, indeed, wherever animal and vegetable decomposition is going on. Therefore it is better to cleanse than to fast. The presence of the plague renders activity

preferable to humiliation. The concluding sentence of the letter deserves to be reproduced. Lord Palmerston advises that the winter should be employed in "planning and executing measures by which those portions of our towns and cities which are inhabited by the poorest classes, and which from the nature of things must most need purification and improvement, may be freed from those causes and sources of contagion which, if allowed to remain, will infallibly breed pestilence, and be fruitful in death, in spite of all the prayers and fastings of a united but inactive nation." Mr. Buckle says, in his *History of Civilisation*, that this paper will "in future ages be quoted as an interesting State paper for illustrating the hist. of public opinion."

In 1853 Dr. Begbie pub. in the *Edin. Medical Journ.* a second Report on the mort. of the *Scottish Widows Fund*, embracing 7 years' experience, from 1845 to 1853. The mort. from C. during that period was at the rate of 3·91. (See 1860.)

In the report of an investigation into the deaths of the *Standard L.* office during the quinquennium 1845-50, by Dr. Christison, the able examiner for that co., and pub. in the *Monthly Journal of Medical Science* for August, 1853 [since reprinted in a separate form], we find the following :

Of 20 deaths from malignant C., 9 occurred in Scotland, 8 in Ireland, and 3 in England. The number would prob. have been larger had not the previous epidemic fever led to a limitation of bus. in Ireland among professions now known to be apt to suffer from C. as well as fever. The deaths have chiefly occurred at an unfavourable period of life. One half of the number occurred before the age of 50, and 8 of them indeed before 40; so that, like fever, this epidemic not only adds to the average deaths, but likewise does so at an age peculiarly unfavourable to assu. cos. The ages of the whole at death were as follows: 2 died between 20 and 30, 6 between 30 and 40, 2 between 40 and 50, 5 between 50 and 60, 3 between 60 and 70, and 2 above 70. The unfavourable influence, however, of epidemic C. on the bus. of an assu. co., will be most clearly seen from its destructive effect upon the expectations of life among the deceased. One with another they survived acceptance only 123 years, while their conjoint expectation of life was 520 years, or more than four times the actual survivancy. Not a single individual of the whole 20 reached his expected term, and only 1 lived two-thirds of it. . . .

The lives which have fallen a sacrifice to C. have evidently belonged, for the most part, to the class of assu. risks which were of the most favourable denomination at the commencement. One, indeed, would now be considered a doubtful risk in the circumstances at the date of entry, as he was an aged officer of the army, who had repeatedly had West India fever, and several times gout, after retiring from service. A second was barely an average risk, because, when accepted at 34, the individual had successively suffered from dysentery, lumbago, and sciatica, and not long before acceptance, from headache so severe as to require the use of leeches. A third appears not to have undergone a medical examination on the part of the Co., but presents no other objection. These however are all the risks to which any exception can be taken. The remaining 17, both in respect of family hist. and personal particulars, *must be regarded as above the average at entry, and many as first-rate lives for assu.*

The mort. from C. has not fallen heavily on any particular profession. . . . On the whole a scrutiny of this section of the emerged risks is far from satisfactory. . . . No foresight can materially reduce the loss from C.

In reference to the belief that C. only attacked unsound or enfeebled constitutions, the writer says: "This opinion, which was rather supported by fact in 1832, was on the contrary opposed to medical experience in 1849; and it is quite at variance with the results of a scrutiny into the C. deaths of 1849 among persons insured in the *Standard Life Assu. Co.*"

The C. outbreak in Gt. Brit. which was supposed to have subsided in 1849 did not in reality do so; for the deaths from this disease regis. in 1850 were 887; while in 1851 no less than 1132 deaths were attributed to it; and in 1852 the still larger number of 1381. In 1853 it proclaimed its existence in an epidemic form, attacking Lond. and some other places slightly, and ravaging Newcastle-upon-Tyne—the deaths in which town and Gateshead in that year were returned as 1927, out of a total mort. from C. of 4419 persons. In 1854 it presented, as on former occasions, a second eruption, and carried off no less than 20,097 persons.

This *Third Cholera Epidemic* in Gt. Brit. [1854] was not nearly so severe as that of 1849. The mort. from C. and diarrhoea in 1848-9 was at the rate of 41 in 10,000; while the mort. in 1854 was at the rate of 22 in 10,000 of the pop., or but a little more than half. The rate of mort. by diarrhoea in the two epidemics were equal, viz. 11 in 10,000 of the pop. Thus in 1854 the mortality from Cholera and diarrhoea were equal; while in 1849 the mortality from Cholera had been 30 in 10,000, or nearly three times its force in 1854.

The following is a Table of the Districts and Towns which suffered most severely from the C. epidemic of 1854, arranged in the order of the rate of mort. experienced :

Districts, etc.	Deaths Regis.	Deaths to 10,000 pop.	Districts, etc.	Deaths Regis.	Deaths to 10,000 pop.
Milton... ..	116	91	London	10,738	43
Towcester	86	67	Cardiff	225	42
Thanet	206	65	Richmond	69	41
Merthyr Tydfil ...	455	59	Stockton & Hartlepool	239	39
Wisbeach	176	49	Auckland	114	32
Gravesend	84	49	West Ham	124	31
Maldon	102	46	Liverpool & West Derby	1290	30
Brentford	196	45	Brecknock	54	30
Romford	113	45	Norwich	193	28

The following T. shows the geographical similarities of the disease of 1854 as compared with that of 1849 :

	Pop. Enumerated.		Deaths from C.		Deaths from C. to 10,000 Persons Living.	
	1841.	1851.	1849.	1854.	1849.	1854.
England and Wales.....	15,914,148	17,927,609	53,293	20,097	30	11
419 Inland Districts ...	9,478,050	10,437,408	17,052	4,426	17	4
208 Coast Districts	6,436,098	7,490,201	36,241	15,671	50	20
100 East Coast Districts	3,425,267	4,050,064	20,844	12,838	53	30
47 South Coast Districts	1,081,588	1,212,344	4,685	508	39	5
61 West Coast Districts	1,929,243	2,227,793	10,712	2,235	49	10

A person living in the coast districts in the same conditions as the coast pop. was thus in 1854 more likely to die of C. in the proportion of 20 to 4 (or 5 to 1) than a person living inland. In 1849 these ratios were 50 to 17 (or 3 to 1). If the coasts are divided into 3 classes, the mort., it will be found, was at the rate of 30 on the E. coast facing the Continent, 10 on the W. coast, and 5 on the S. coast, out of every 10,000 of the pop. Exclusive of the Lond. districts, the mort. by C. in the districts of the E. coast was at the rate of 12 in 10,000. In 1849 the rates of mort. on the E. coast were 53; on the W. coast 49; on the S. coast 39. The 42 districts on the coal-fields of E. and W. suffered severely from the epidemic in 1849, where to 10,000 living the deaths were 46 by C. and 13 by D.; while in 1854 the deaths to 10,000 were 12 by C. and 14 by D. The latter rates include the deaths from C. and D. in Newcastle and Gateshead during the year 1853.

Males suffered more than females from C. and D. in 1854, at all ages under 25; at the ages 25 to 45 the females suffered more than the males; at 45 to 55 the mort. rate of males was greater than the mort. rate of females in 1849; but in 1854 the rates were nearly equal. From the ages of 55 to 85 the old women suffered more than the old men; at the age of 85 and upwards the facts became too few to yield certain results; but they seem to show that proportionably more old men of 85 and upwards die of C. and D. than old women at the same advanced age. The deaths of males from C. in England in 1854 were 9860; of females 10,237. The deaths from D. in the same year were: males 10,211; females 9841. But adding C. and D. together, the following result, remarkable for its uniformity, was obtained: males 20,071; females 20,078.

During this visitation great ravages were committed in Broad-street, Westminster. It was discovered to arise from the impurity of the water in a well in that street. The discovery was in the first instance accidental; but more complete investigation showed that the well was simply poisoned by an influx of sewage and of surface drainage, percolating through the crevices of the bricks forming the lining of the well. It was also very fatal in Soho, and in some of the south parts of Lond.

Dr. Farr, reviewing, in the 17th R. of Reg.-Gen., the rise and progress of the C. outbreak of 1854, says:

It is impossible to overlook the diarrhoea which has gone on gradually increasing in fatality since the year 1838, when 2482 deaths were referred to that cause; while in 1847 the deaths by diarrhoea were 11,595; in 1848 nearly the same number; in 1849 the deaths by diarrhoea were 17,831; thus making the deaths by C. and D. in the epidemic year 71,104, or 72,180 if we add the cases of persons attacked while labouring under other fatal diseases. Diarrhoea did not discontinue its ravages after 1849; the deaths in the 3 following years were 11,468, 14,728, and 17,617; in 1853, when C. appeared in the epidemic form, the deaths from diarrhoea fell to 14,192; but in 1854 their number was 20,052. Thus the deaths by C. and D. in this year were 40,149, exclusive of a certain number of deaths which epidemic diarrhoea caused in conjunction with other diseases. Diarrhoea is often a symptom of other well-marked diseases; and it is also the effect of a class of medicines; but this diarrhoea which always prevails in hot weather, and has been so common since the year 1846, is evidently a variety of C., proving fatal chiefly to young children and to old people, who do not so commonly exhibit the spasms of C., but have nearly all the other symptoms.

In 1854 there were also pub.: (1) *Report on Epidemic Cholera, drawn up, by desire of the Cholera Committee of the College of Physicians*, by Drs. W. Baly and W. W. Gull; (2) *Minute on Preventative Measures in relation to Epidemic Cholera*.

In this year also the C. raged in Italy and Sicily; above 10,000 are said to have died in Naples. It was also very fatal to the allied troops at Varna in the autumn of this year.

In 1855 Dr. Sutherland addressed a *Letter to the General Board of Health on Epidemic Cholera in the Metropolis in 1854*. There was also pub. in this year: (1) *Report [to General Board of Health] on the Results of the Different Methods of Treatment pursued in Epidemic Cholera*; (2) *Report on the Cholera Patients admitted into the Middlesex Hospital during the Year 1854*, by Dr. S. W. Sibley; (3) *Report on the Cholera Outbreak in the Parish of St. James, Westminster, during the Autumn of 1854*; (4) in Stockholm, a Report on the Cholera outbreak in that city in 1853; (5) in Copenhagen, a Report on the Cholera outbreak in that city in 1853.

Dr. Farr says in the 17th R. of Reg.-Gen. pub. 1856:—"Cholera has prob. always

existed in England, and it was well described by Sydenham in the 17th century ; but the epidemic form presents some differences in the symptoms as well as in the extent of its ravages. The chief characteristic is found in the duration of the fatal cases, half of which terminate within one day (24 hours) of the first appearance of decisive symptoms, while half of the cases of common C. terminate in *three days*, and half the cases of diarrhoea extend over *six days*."

In 1860 Dr. Begbie pub. in the *Edin. Med. Journ.* a further Report on the mort. experience of the *Scottish Widows Fund*, for the 7 years ending 1859. The mort. from C. during that period was at the rate of 1·47 p.c. or less than one-half of that of the previous septennium. Over the entire period of 44 years it had averaged 2·11 p.c. (See 1847 and 1853.)

In 1861 the late Mr. Spens pub. *Tables of the Mort. Experience of the Scottish Amicable Life Assu. So. from 1826 to 1860*. There were included therein 24 deaths from C., of which 4 occurred between the ages 25 and 35 ; 8 between 35 and 45 (of which 3 had been insured as hazardous) ; 5 between 45 and 55 (of which 1 was a female, and 1 had been insured as hazardous) ; 6 between 55 and 65 (of which 1 had been ins. as hazardous) ; 1 in class 75 and upwards.

In 1862 Dr. J. G. Fleming, M.D., the medical adviser of the *Scottish Amicable*, supplemented the preceding by his useful little book, *Medical Statistics of Life Assu.*, etc. He says, "So far as I am aware, no Brit. assu. co. has pub. any T. or statement to show the proportionate mort. from classes of disease, or from particular diseases, to the number of lives it had at risk." He shows that Mr. Spens's C. statistics relate to 10,255 individuals, "and the sums of the number of lives exposed to risk during each year of age amount to 56,300." He endeavours to construct some such a table as he speaks of, but finds the difficulties insuperable. We have tried, with a like result. He succeeded, however, in constructing the following T., which presents some important points for comparison ; but it includes "Dysentery" with C. and D.

TABLE OF DEATHS FROM CHOLERA, DIARRHŒA, AND DYSENTERY, AT SIX GROUPS OF AGES :

Ages.	Number of Deaths from C., etc.			Per-centage of Deaths from C., etc.									
				On Lives at Risk.			On Deaths from all Causes.						
	England—Average of 7 Years of 1848-54.	Gotha Society.	Scottish Amicable.	England.	Gotha Society.	Scottish Amicable.	England.	Gotha Society.	Scottish Amicable.	Scottish Widows.	Standard.	North British.	Equitable So.
15 to 25	1436	0	1	·042	·000	·042	4·97	0·00	5·88	—	—	—	—
25 „ 35	2145	3	8	·078	·016	·054	7·43	2·00	7·14	—	—	—	—
35 „ 45	2138	15	10	·102	·033	·051	7·89	3·03	4·80	—	—	—	—
45 „ 55	2032	25	6	·134	·061	·048	7·65	3·86	3·37	—	—	—	—
55 „ 65	2061	24	10	·203	·111	·176	6·80	3·34	7·24	—	—	—	—
65 „ 75	2068	18	6	·356	·311	·320	5·09	3·98	5·00	—	—	—	—
Total ...	11880	85	41	·104	·064	·072	6·67	3·44	5·30	4·07	6·83	3·99	1·48

The *Standard* column did not embrace the then last quinquennium. The *Equitable* So. C. experience only embraced the outbreak of 1832. [See details at close of this art.]

In 1862 Dr. J. G. M. Burt pub. in the *Edin. Medical Journ.*, *A Report of the Causes of Death in the North Brit. Life Assu. Co. from the Commencement up to 1860*. During this period of 37 years, 1823-60, only 16 cases of C. had arisen. The average duration of life after ins. was 8½ years. The per-centage of mort. from C. was 1·22.

In 1864 Dr. Farr pub. the *English Mort. T.* (No. 3). It had been the subject of remark that no previous mort. T. in Gt. Brit. had embraced mort. results in which epidemic C. had taken any part. It was so. The English tables, Nos. 1 and 2, had been based upon periods remarkably free from the mort. of C. But T. No. 3—being based upon the two censuses of 1841 and 1851, and upon the returns of deaths over a period of 17 years [1838-54] extending to 6,470,720 deaths—embraced not only the mort. of 1849, which was the most fatal year in regard to C. which has been experienced in Gt. Brit. (as will be seen by reference to the T. at the end of this art.), but also the deaths of 1854, the next severe visitation.

The Reg.-Gen. in his 25th R., pub. 1864, says :—"Women of the age of 15 and under 45 were cut off in great numbers in the C. years." Regarding its effect upon men, the following figures are given. Over a period of 25 years the mean ann. mort. of men of the age of 25-35 was ·975, but the mort of men of that age in 1849 (C. year) was 1·236, and in 1850 it was as low as ·877 p.c. The range (of variation) was ·359. In the one case it was more than 26 p.c. above ·975, and in the other 10 p.c. below that mort. rate. Again, at age 55-65 the mean ann. rate for men was 3·136, but in 1849 the rate was 3·653 ; in 1850 it was 2·979 : thus the range was ·674 at that age.

In June, 1865, the C. was reported to be raging in Alexandria. In July it had materially abated. In Aug. of that year it was very severe in Constantinople; more than 50,000 cases were estimated to have occurred. It subsided after the great fire of 6th Sept. that year. In Aug. 843 deaths were reported from Ancona. Between July and Oct. Marseilles, Paris, and Madrid suffered greatly. In Sept. Toulon and Southampton each suffered. In Germany the epidemic was very severe, and also in Naples.

In 1865 Mr. John Mann, the medical adviser of the *Brit. Empire Mut. L.*, pub. the mort. experience of that office for the first 10 years of its existence—that is, down to 1857—wherein he says:—"We have to report 13 deaths from C.; yet the experience of the so. includes not only one great epidemic visitation of the scourge, but a second of smaller proportions. Only two of these deaths were females. Of the total number 2 occurred between 20 and 30 years of age; 2 between 30 and 40; 4 between 40 and 50; 3 between 50 and 60; and 2 between 60 and 70." The rate of mort. was 5.06 p.c.; but it was rendered high by embracing two epidemics, viz. 1849 and 1854.

In 1865 there was pub. in N.Y. *Report by the Council of Hygiene and Public Health of the Citizens Association of New York upon Epidemic Cholera and Preventative Measures*, which contains much information of a practical character.

In Feb. and March, 1866, an International Congress (proposed in the preceding Oct.) was held in Constantinople, for the purpose of considering epidemic C. in its various aspects. Seventeen States took part in the Conference, viz.:—England, France, Prussia, Austria, Russia, Belgium, Holland, Denmark, Sweden, Italy, Greece, Spain, Portugal, the Papal States, Persia, Turkey, and Egypt. These States were represented by 36 delegates. His Highness Aali Pasha, Minister of Foreign Affairs, presided. The points discussed were: (1) the origin and development of C.; (2) the mode of its propagation; (3) measures of preservation—hygiene—restriction; (4) form of resolutions. The conclusion finally adopted was that C. may be propagated, and from great distances; and a number of preventive measures were recommended.

We now reach what may be termed the *Fourth Great Cholera Epidemic* in Gt. Brit. Asiatic C. had hovered over Europe in 1865, settling down with some severity upon Paris, Marseilles, and some other Continental cities. It also prevailed in England, the regis. deaths from it in the year being 2191; those from diarrhoea reaching the large number of 23,531. On Wednesday the 11th July, 1866, the epidemic began to show itself in an aggravated form in Lond. It continued severe during the remainder of that month, and in Aug. The total deaths from it regis. in Lond., including West Ham and Stratford (not embraced in the Lond. district), were 5973; and from diarrhoea, 3197—total 9170 by the two maladies.

The epidemic was felt all over the kingdom, and while the deaths by it in the Lond. district proper were 5596, the deaths in the other ten divisions of E. and W. were 8782. The pop. of the ten divisions is six times the pop. of Lond., and at the Lond. rates the deaths by C. would have amounted to 33,576. The mort. in the ten divisions was at the rate of 5 in 10,000 against 18 in Lond. The disease, says Dr. Farr, "was only fatal to any considerable extent in certain regions, which may be called Cholera-fields, as here the centres of activity were all in direct communication with each other, and were surrounded by free border-lands." The mort. of all England was at the rate of 7 deaths by C. in 10,000 persons living. In the three Midland divisions—the S. Midland, N. Midland and W. Midland—the deaths by C. were at the rate of 1 in 10,000; in Yorkshire, 2; in the S. Western division, 3; in the S. Eastern and the Eastern divisions, 4; in the Northern division, 5; in the N. Western division (Lancashire and Cheshire), 9; in Lond. 18; in the Welsh division (Wales and Monmouthshire), 18 in every 10,000. It was only in Wales that the disease was to any extent more fatal in 1866 than it was in 1854.

The deaths in the U. K. were about 17,793; and the mort. by the disease in the year 1866 was at the rate of 6 deaths in every 10,000 inhabitants. The following are the exact returns for each division of the U. K.:

	Estimated pop. 1866.	Deaths regis. from C. in 1866.	Deaths from C. to 10,000 of pop.
United Kingdom.....	29,946,058	17,793	6
England and Wales ...	21,210,020	14,378	7
Scotland	3,153,413	1000	3
Ireland... ..	5,582,625	2415	4

Dr. Farr says, in reference to this outbreak:

C. was very unequally distributed over England. 14,378 people were slain by the disease in 641 districts; and of that number 10,889 fell in 37 districts of Lond. and in 24 other town districts; 3489 in 342 districts; while in 238 districts no death from C. was recorded. All the districts, with the exception of Wigan and Merthyr Tydfil, were seaport towns or districts in their immediate neighbourhood; the pop. were dense, and were nearly all dwelling on the lower alluvial soils of the kingdom. *These correlations have been observed in all the epidemics.* The exceptions are accounted for by such peculiar circumstances as the mort. around the Broad-st. Pump [Westminster], in 1854; and in St. Giles', Lond., in 1849; where either the people were excessively dirty and crowded, or took in water large doses of C. matter in a very active state.

Regarding sex and age, the following details will prove interesting :—Deaths 14,378—males, 6995 ; females, 7383. Of the males 356 died under 1 year, and 1517 under 5 ; 772 between 5 and 10 ; 395 between 10 and 15 ; 229 between 15 and 20 ; 318 between 20 and 25 ; 824 between 25 and 35 ; 894 between 35 and 45 ; 887 between 45 and 55 ; 647 between 55 and 65 ; 380 between 65 and 75 ; 122 between 75 and 85 ; 9 between 85 and 95 ; and 1 over 95. Of the females 305 died under 1 year and 1361 under 5 ; 692 between 5 and 10 ; 311 between 10 and 15 ; 223 between 15 and 20 ; 364 between 20 and 25 ; 1043 between 25 and 35 ; 1100 between 35 and 45 ; 883 between 45 and 55 ; 704 between 55 and 65 ; 478 between 65 and 75 ; 187 between 75 and 85 ; 34 between 85 and 95 ; and 3 over 95.

The following T. shows the districts and towns which suffered most severely from the C. epidemic of 1866, arranged in the order of the rate of mort. experienced :

Districts.	Deaths Regis.	Deaths to 10,000.	Districts.	Deaths Regis.	Deaths to 10,000.
Swansea	521	88	Northwich	76	22
Neath	520	79	Carnarvon	75	22
Llanelly	232	76	Tynemouth	167	19
West Ham	389	50	London	5596	18
Totnes	146	45	Isle of Wight	106	18
Carmarthen	143	40	Thanet	58	18
Liverpool and West Derby	1989	36	Godstone	17	17
Gower	29	35	Rochford	29	15
Exeter	113	33	Pontypridd	48	13
Goole	50	31	Portsea Island	143	13
Bridgend	80	28	Wigan	137	13
Wirral	58	28	Pembroke	42	13
Bedwelty	122	24	Milton	21	13
St. Thomas (Devon)	117	24	Ormskirk	60	12
Westbourne	16	23	Birkenhead	78	11
Merthyr Tydfil	229	22	Haverfordwest	40	11
Southampton	106	22	Gainsborough	29	11
Great Broughton... ..	137	22	Houghton-le-Spring	25	11
Holywell	88	22	Cardiff	76	10

In a Special Supplement to the Weekly Bills, pub. in Dec., 1866, the Reg.-Gen. furnished the following important details regarding this last C. outbreak :—The French returns show that in Paris the epidemic of 1865 reached its maximum in Oct., in which month 4653 deaths were recorded. In the first six months of 1866 only 69 deaths occurred, but in July the deaths suddenly rose to 1743. The proportional number of deaths by C. to every 10,000 of the pop. of Paris in 1865 was 39 ; in the first seven months of 1866 it was 11. In Lond. the deaths by C. in the year 1866 were in the proportion of 18, in Liverpool, of 36 to 10,000 living. In Italy the epidemic began on the 25th of June, 1865, in the province of Turin, and destroyed 12,901 lives during that year, or to every 10,000 of the pop. living in the 35 provinces and the 349 communes that were attacked by C. 35 deaths occurred. It appears that in Italy the town pop. suffered less severely than that of the country, the number of deaths to 10,000 living being 38 in the former and 56 in the latter case. In Naples 2301 deaths are recorded in 1865 out of 446,931 inhabitants, being in the proportion of 52 deaths by C. to 10,000 living. In Vienna the returns date from the 11th Aug. to the 10th of Nov., 1866—the ratio was 51. In seven Belgian towns, comprising Antwerp, Brussels, Bruges, Ghent, Mons, Liège, and Namur, no less than 11,771 deaths occurred from May 1st to Oct. 15th of the year 1866, out of a pop. of 553,377 ; or the deaths by C. were in the proportion of 186 to 10,000 living. In Brussels the proportion was 164. In Holland 18,547 deaths occurred in 1866. Taking 15 Dutch cities and towns, including Amsterdam, it appears that 8872 deaths by C. were recorded in the five months from June to Oct. of 1866, being in the proportion of 107 deaths to 10,000 living. In Amsterdam the ratio was 42, while in Utrecht it was 271. Norway, it appears, suffered but slightly from the epidemic in 1866, only 48 deaths are recorded out of a pop. of 1,701,478.

In 1866 the United States, or rather some of the principal cities in the States, suffered from a severe visitation of Asiatic C. In St. Louis, a considerable city on the Mississippi—which by the way sustains some deaths by C. almost every summer—the deaths in that year are said to have reached 200 per day in a pop. diminished by flight to 180,000. During this year there was pub. in Boston, U.S., *A Communication from the City Physician on Asiatic Cholera. Is it a Contagious Disease?* This report, which is an official document, contains a great deal of valuable information.

In 1867 a "Cholera Conference" was held at Weimar, and there were present many of the leading epidemiologists and mycologists, including some from England. An opportunity was afforded for "the interchange of ideas," as the diplomatists say, on this and other important theories, such as the local relations of Cholera to soil as regards its geological character and its conditions of moisture, and the alleged efficacy of dis-

infection, the communicability of C., the meteorological aspects of the case, and the like. Whether C. is a fermentation of infinite microscopic self-multiplying organisms in the bowels, drawing the serum from the blood with excruciating spasms, leaving the clot to coagulate throughout the body as in a bruised surface, and thus producing the blue and livid colour which marks the fatal stage of this terrible malady, or whether any other theory be preferred, the practical effects as regards the human subject and the practical means of prevention are in the present state of our knowledge the same. Be the cause of C. what it may, excremental pollution of air and water will develop it anywhere and everywhere, and the abolition of these will remove it.—*Vide Dr. Simon's Report to the Privy Council, 1867.*

In 1867 C. prevailed in Rome, Naples and Sicily in Aug. and Sept., and in some parts of Switzerland in Oct.

In the 28th R. of Reg.-Gen., pub. 1867, Dr. Farr uttered the following words of wisdom and warning—wonderfully applicable to the present moment:

C., like smallpox, is one of those zymotic diseases which exist in all climates: under favourable conditions their products assume an active form, capable of inducing in other bodies the same morbid changes by which they were generated. They estab. the kinship of the human race. Every nation is vitally interested in the sanitary condition of every other nation. Hence the endless discussions about contagion, and as regards C. the futile vexations of quarantine. There are difficulties in the hypothesis, because experiments cannot be performed on human beings as they are in the laboratory of the chemist, or as they may be in veterinary hospitals; but for all practical purposes it may be assumed that the discharges of patients in the epidemic, either casually touching the mouth, or entering in dust and vapour through air or water, induce diarrhoea or C. in a certain proportion of those exposed to their influence. Now Lond. was supplied with the sewage water of a river by several cos. in 1848-49; all, except one, got their water beyond the reach of the Lond. sewage in 1853-54, and the mort. fell proportionally as the water became purer. At the present time the water of all the cos. is comparatively little contaminated by zymotic pollution. The Lond. pumps have also been placed under inspection. The drainage is in rapid progress. Analogy justifies the hope that as the city is purified, and as the means of diffusion are cut off, the destructiveness of the disease will be diminished.

The detection since 1849 of the mode of propagation and of the premonitory stage of C. by English practitioners are among the greatest triumphs of medical science. For as the surgeon cannot restore the shed blood to the heart, but can tie a ligature round an artery, and stop bleeding, so the physician cannot revivify a man in collapse, or restore the serum of his blood, but he can in nine cases out of ten check diarrhoea turning into C.

C. throws men into terrible convulsions, and kills half of its victims in twenty-four hours; but there is a merciful warning of its approaches in probably every instance, the neglect of which is fatal. So it is with the epidemic itself in England. *It has hitherto commenced generally about Oct., and has only proved excessively fatal in the following summer. Thus all our towns have six months' notice, and the whole winter for the preparation of defensive works. Every district in the kingdom should at once appoint its health officer.*

In 1868 there was pub. by way of supplement to the 29th R. of Reg.-Gen., but in a separate vol., *Report on the Cholera Epidemic of 1866 in England.* This Report was prepared by Dr. Farr under direction of the Reg.-Gen., and is a most valuable and exhaustive work. Dr. Farr says:

Thus, by the year 1866, from the obs. of the three great plagues, we had learned enough of the causation of C. to justify us in believing that in Lond. it could be confined within narrow limits—in the first place, by preventing any extensive distribution of the C. stuff through water, as the cos., in compliance with the Water Act of 1852, had, it was believed, since 1854 carried out all their purifying filtering works; and in the second place, by the organization of health officers, who could secure attention to the early treatment of premonitory diarrhoea, and to the destruction by disinfectants of the C. flux.

These anticipations, from various causes, were not realized, as we have already shown. Dr. Farr deals with these causes individually and collectively, in a most masterly and comprehensive manner. This learned writer says:

It may be stated first simply as hypothesis, that the C. is propagated epidemically by a material substance. . . . This matter may be called *cholrine*. [CHOLRINE.] . . . Then the elements of the disease must either have been diffused (1) by personal contact; (2) by transmission through the air; (3) or by dissemination in vapour of sewers; or (4) by the various waters. Now the evidence that C. can be communicated in these ways by cholrine is conclusive. Instances of a C. patient brought to a distant house and communicating forthwith the disease to an inmate are too numerous to be mere coincidences; as the chances by the doctrines of prob. against such numerous coincidences are inconceivably great. But it is evident that as the pop. of every district of Lond. is in free communication with every other district, and is constantly interchanging its residents on both sides of the river, so by this mode of communication cases would be, as indeed they were to a limited extent, freely distributed all over Lond. . . .

I now proceed to call attention to the mort. from C. in the various water-fields of Lond. As their areas correspond with none of the other recognized divisions of Lond., the 135 sub-districts have been distributed into 15 groups, with the various heads corresponding as nearly as possible with the various water-fields. It will be seen that while there is a certain mort. from C. in every condition, *the excess above this standard is constantly in proportion to the impurities of the water during the epidemic period.* Lond. is now supplied with water by 8 cos. South of the Thames it is supplied by 3 cos. . . . North of the Thames by 5 cos. . . . The proportion of deaths by C. to 10,000 inhabitants in 1866 will show the relative fatality of the disease.

These deaths were found to be as follows:—Chelsea Co., 4; West Middlesex, 4; Grand Junction, 3; New River, 8; East Lond., 72; Southwark, 7; Kent, 15; Lambeth, 6. Some of the cos.—especially those on the south side of Lond.—overlap each other considerably; and it has been found very difficult to apply this test in such cases. Again, “As water conveys C. matter which multiplies and reproduces itself in the pop., it often opens fresh fountains of disease, which extend their operations beyond the direct limits of the water supply, either through the medium of well-water, or personal contamination, or linen, or sewer vapours.”

The Report says: Cholera in an individual goes commonly through a regular series of development; commences with diarrhoea, grows hourly more violent, until the crisis is

past, and then, if death intervene not, subsides slowly in consecutive fever, lingering until the danger is over, and the patient restored to health. This is a type of the course which the epidemic takes in a community. The rapidity both of growth and decline here depends on the means of diffusion, as well as on the activity of the diffused *cholrine*. High temperature has a sensible effect. The duration of the epidemic also depends on the magnitude of the community ; thus it goes through a house in less time than through a great inst. ; in less time through a small town than through a large city. It may in this respect be compared with a conflagration, which spreads rapidly through houses put in communication with each other by inflammable materials, and dies out sooner in a small than in a great city—where the embers smoulder for a long time, and unless extinguished are liable to break out in successive eruptions.

It contains a T. showing the *occupations* of many who died from C. in 1866. From this T. is taken the following list of professions and trades, and the numbers belonging to them who died :

1 clergyman, 4 Protestant ministers, and 2 other religious teachers ; 3 solicitors, but *no* barrister ; 2 physicians, 3 surgeons, 7 druggists ; 2 authors, editors, or writers ; 2 artists ; 10 musicians ; 4 schoolmasters ; 9 hotel-keepers, 27 publicans, 6 beersellers ; 3 merchants, 1 banker ; 41 clerks, 31 commercial travellers ; 36 railway officers and men ; 12 cabmen, 18 carriers, carters, or draymen ; 56 barge, lighter, watermen ; 203 seamen in merchant service ; 4 land proprietors, 58 farmers, 152 agricultural labourers ; 27 gardeners ; 3 booksellers, 10 printsellers ; 3 watchmakers ; 47 engine and machine makers ; 14 coachmakers ; 21 builders, 116 carpenters, 67 bricklayers, 49 masons, 18 plasterers, 47 plumbers, 34 cabinet makers ; 3 undertakers ; 10 wheelwrights ; 7 woollen cloth manufacturers ; 10 hairdressers, 62 tailors, 111 shoemakers, 10 ropemakers ; 9 cowkeepers or milksellers, 45 butchers, 10 fishmongers, 21 bakers, 14 greengrocers ; 10 sugar-refiners, 19 grocers ; 6 tallow-chandlers ; 9 curriers ; 40 sawyers, 23 coopers ; 254 coal miners, 3 copper or tin miners, 12 iron miners ; 22 coalheavers, 13 gas-works servants ; 25 brickmakers, 36 railway labourers, 16 navvies ; 6 earthenware makers, 4 glassmakers ; 15 salt manufacturers ; 23 copper manufacturers, 17 tin manufacturers ; 5 lead manufacturers ; 147 iron manufacturers, 89 blacksmiths, 22 boiler makers ; 689 labourers ; 17 emigrants ; 14 gentlemen ; 5 prisoners. In reference to 2960 male deaths no occupation was stated.

Regarding the female deaths, the great majority were returned as wives, daughters, widows, etc. ; but among those in which the occupation was stated were the following : 10 innkeepers' wives, 35 publicans' wives, 20 farmers' wives, 15 butchers' wives, 85 shoemakers' wives ; 5 were schoolmistresses ; 147 domestic servants ; 24 nurses, 63 charwomen ; 10 hawkers and pedlars, 14 cotton manufacturers, 11 milliners, 49 seamstresses ; 19 laundresses.

The real test of *relative mort.* can only be applied where the number of persons engaged in any particular occupation is known. Such a T. is furnished in the Report. The range of mort. is considerable, and Dr. Farr considers this to be mainly due "to the sanitary condition of the locality in which the occupation is carried on." He adds :

The mort. of salt-workers, copper-workers, and sugar-refiners was high. Now of 2016 men engaged in the salt manufactures of Eng. 1237 live in Northwich ; 2236 of 3827 copper manufacturers live in Swansea, Neath, and Llanelly ; and 1373 out of 2790 sugar-refiners live in the heart of East Lond. In all these districts the epidemic raged with great severity among all classes of the pop. ; and it is clear that if the occupations had been pursued in other places no such mort. would have occurred. The comfortable English clergymen, the farmers, and the agricultural labourers in open districts suffer little, because they live in happier sanitary regions.

Some curious facts are given regarding *sex* and *age*, in relation to deaths from Cholera. "The fatality of an epidemic depends not only on external conditions, but also on the internal organization. *It is found by experience that the two sexes at different ages are not affected to the same extent by all diseases, either because by the habits of life they are not exposed to the same extent to the causes of disease, or because the power of resisting the operation of those causes varies.*" The 3 epidemics of Cholera (including that of 1831-2) supply data for determining the mort. of C. at different ages in the two sexes : for the deaths have amounted to 102,186, inclusive of about 14,418 deaths by the epidemic, which were regis. under the head of diarrhoea. "It is important to include these outside deaths in estimating the effect of age, inasmuch as the occult form of the disease is not met with in equal proportions at all ages." The characteristic symptoms are not so well marked in early infancy or in the second infancy of old age ; and "the reason of this is, that the muscular and nervous systems being then less active, and giving rise to less convulsive and violent symptoms, the medical attendants return the cases as diarrhoea." At all ages above 5 and under 55, the number of such cases of occult choleraic diarrhoea is not considerable ; while under the age of 5 years, according to this estimate, 4 cases of diarrhoea must be added to every 6 deaths regis. from C., to get the actual deaths by the epidemic. At the age of 75 and upwards also there is a large addition of these occult cases. "*After correction we find the mean mort. in the 3 epidemics was, of males 18.0, females 17.8, to 10,000 living at all ages.*" The addition for occult cases was nearly the same, or 2.6 to the male, and 2.5 to the female mort.

The mort. is higher in boys than in girls at all ages under 15 ; at the ages of reproduction, 25-45, the mort. of women, many of them pregnant, exceeds the mort. of men ; but at the ages after 65 the mort. of men exceeds the mort. of women. Dr. Farr considers there is evidently a *law of mort. involved in the age, independently of the sex*. Thus in the first three *lustræ* of life, the deaths of boys to 10,000 living were 31.8, 13.2, and 7.6 ; of girls, 28.4, 12.6, 6.4 ; and the mean mort. of the two sexes at the same ages were 30.1, 12.9, and 7.0, which differ little from the series 30.1, 14.5, and 7.0,—numbers obtained by assuming that *the mort. is inversely as the age*, and decreases about 14 p.c. for every year

of age, or is less than half at 5-10, and less than a fourth at 10-15, what it was in the first 5 years of life. After the age of puberty, or from the age of 15 to 25, the mort. also increases very little ; it is 8·1 for males, and 7·8 for females ; and at the 6 decennial ages extending from 25 to 85 the mort. increases from 15·4 to 43·6 at a very constant ratio, as is seen on comparing the *calculated series* [DISEASES, HYPOTHESES CONCERNING] with that observed in both sexes. This is shown more clearly in the following T.

- Ages.	Observed in Three Epidemics— The Deaths by C to 10,000 living at each age			Calculated Series.
	Men.	Women.	Mean.	
25—35	15·2	15·6	15·4	15·4
35—45	19·5	20·2	19·8	19·0
45—55	23·5	23·1	23·3	23·4
55—65	28·4	31·4	29·9	28·9
65—75	35·9	35·4	35·7	35·7
75—85	42·2	44·9	43·6	44·0
85—95	46·0	41·4	43·7	54·0
95 & upwards.	82·4	32·8	57·6	67·0

Thus, to 10,000 men living at the age 25 and under 35, the deaths by C. and choleraic diarrhoea, as above defined, were 15·2 ; to 10,000 women the deaths were 15·6 ; and the mean mort. of the two sexes in equal numbers is expressed by 15·4. The mean deaths by C. at the next age (35-45) were 19·8 to 10,000 living, and so on.

We are told that the resistance which the body offers at different ages may be of two kinds : it may resist an invasion, and, as in unsuccessful vaccination and in unsuccessful inoculation, not *take a disease*, as it is called ; or it may take the disease, and live through it, or succumb to it, in variable proportions. *All the cases of C.* have never been regis. in any epidemic, and it is impossible to determine directly what relative numbers are attacked at each age. The deaths out of 3635 cases of C. at different ages were investigated by the Scientific Committee of the Board of Health, and the result showed that, given 100 men attacked at the age 25-35, about 36 died ; while of 100 attacked at the age 35-45, about 44 died ; and generally the mort. of persons actually attacked increases as age advances, according to a determinable law. The following T. shows the relative proportion of attacks of men and women at 3 different ages of life :

Ages.	Pop.	Men.		Women.	
		Attacks.	Deaths.	Deaths.	Attacks.
25—35	10,000	41·3	14·7	15·1	42·8
35—45	10,000	42·8	18·9	19·4	45·2
45—55	10,000	43·8	22·4	21·9	44·7

The *Deaths* in relation to the attacks are shown in the following T. :

Ages.	Death to one attack.		Estimated proportion to 10,000 living.			
			Males.		Females.	
	Males.	Females.	Attacks.	Deaths.	Attacks.	Deaths.
All Ages.	·486	·480	31·6	15·4	31·9	15·3
0— 5	·611	·632	31·5	19·3	27·0	17·0
5—10	·542	·424	22·9	12·4	27·7	11·7
10—15	·437	·500	16·5	7·2	12·5	6·2
15—25	·328	·380	23·9	7·8	19·2	7·5
25—35	·356	·354	41·3	14·7	42·8	15·1
35—45	·441	·429	42·8	18·9	45·2	19·4
45—55	·513	·491	43·8	22·4	44·7	21·9
55—65	·562	·519	46·5	26·1	55·0	28·5
65—75	·589	·578	52·1	30·7	51·8	29·9
75—85	·741	·695	40·1	29·7	49·4	34·3
85—95	·858	·667	31·7	27·2	44·3	29·6
95 & upwards.	—	·500	—	20·6	59·6	29·8

This T. is partly based upon the observations of the Scientific Committee of the Board of Health on the epidemic of 1854.

Regarding the duration of fatal cases, Dr. Farr remarks, that “ the greater the dose of

any poison, the more fatal it is, *and the more rapidly it is fatal*. By parity of reasoning it may be presumed that the more destructive an epidemic is, the more rapid are the cases in their course. The mort. by C. in the epidemic of 1849 was at the rate of 30 in 10,000, and the mean duration of the fatal cases was 50 hours. The mort. by C. in 1866 was only at the rate of 7 in 10,000; the duration of fatal cases was 61 hours.

Regarding the days of the week most fatal in C. during the epidemic of 1866, the fewest deaths occurred on Saturday; the next fewer on Sunday. The greatest number occurred on Wednesday, and the next greater on Tuesday. In 1849 the deaths on Tuesday and Saturday stood highest; on Thursday and Friday lowest. The popular belief as to unlucky Friday did not apply, as Dr. Farr has already pointed out, to either of these epidemics. He adds, with great sagacity, "If the temperate or intemperate habits of any of the working classes of Lond. had any effect on this series of facts, they therefore raised the deaths on Monday, lowered them on Friday."

We cannot follow this able and instructive Report further. We have indeed quoted from it in several other portions of this art.; and we shall quote from it in other parts of this work. Its learned author concludes: "To render the generation of great epidemics of C. rare, nay, impossible, India has only to carry out the measures which have proved efficacious in England."

In Dec., 1868, the *Scientific Review* contained the following:

Cholera Fungus.—After a long series of botanical researches, Prof. Ernest Hallier, of the University of Jena, has convinced himself of the presence in the excreta of C. patients of a microscopic fungus which exist in them in considerable quantities. On submitting this minute plant to a careful microscopical examination, the distinguished botanist found that it has all the characters of *Urocystis oryzae*, which in India is found sometimes in the rice plantations. Prof. Hallier then manured some rice plants with the excreta in question, and finds that they perish rapidly. A whole plantation may be thus destroyed by the *Urocystis* in a very short space of time.

In 1869 the *Experience* T. No. 2 was pub. This being based upon the mort. experience of a number of Brit. ins. offices, will also embrace the mort from C., as also from D., so far as these diseases affected the class of lives ins. in the offices contributing their experience.

Sir William Jenner said before the Brit. Medical Asso. in 1869:

With reference to C., the special facts collected by Dr. Snow prove that one of the great agents in the diffusion of C. was drinking water; that every virulent local outbreak in a limited district was clearly coincident with the pollution of the drinking water supply of that district; and that persons living at a distance, if by accident they drank of the polluted water, suffered as certainly as if they dwelt in the district specially affected. The conclusion which follows from the facts collected by Dr. Snow is that, the conditions existing, be they atmospheric or other, which determine the epidemic disposition to C., the presence of minute portions of C. excreta in the water supplied to a district for drinking purposes will be followed by an outbreak of C. in that district. Careful investigations into the circumstances attending local virulent outbreaks of C. during the last epidemic have proved the truth of that conclusion. I will refer to two such investigations only, namely, Mr. Netten Radcliffe's admirable researches into the relation between the water supply and the spread of C. in Lond., and to Dr. Bellot's most conclusive obs. on impure water as a cause of C. in Holland. Dr. Snow's investigations traced special individual cases and local outbreaks to one existing cause. Mr. Radcliffe's researches bear especially on the influence of the polluted water in determining excess of mort. in a large district of a great city. Dr. Bellot's facts show that those towns and those parts of a town in Holland in which there was the greatest facility for the contamination of the water supply by C. dejections were those which suffered by far the most severely. The spread of typhoid fever by contamination of the drinking water supply is, if possible, less disputable than is the spread of C. by the same means.

Dr. Guy, in his valuable work, *Public Health*, pub. 1870, has pointed out that between the epidemics of Cholera and plague there is an unmistakable resemblance. They are, he says, evidently diseases of the same class. The figures on the death registers rise to an unwonted height in certain years only. They harmonize with the theory of an imported disease. But there is this difference. The C. of 1854 attained its maximum in 8 weeks, and subsided in 13; while the plague (of 1665) took 22 weeks and 17 weeks to accomplish the same feats. The figures for the C. are suggestive of a disease carried chiefly in currents of air; those for the plague of one spreading more slowly by direct contact, and exposure of the healthy to the sick. He adds:

This disease too, like others of its class, is most fatal when it first breaks out, least fatal when it is passing away. How it selects its victims we do not know, and cannot expect to learn. Some whom it kills quickly seem in the rudest health, others who are longer dying are obviously less vigorous. Whether a man is to succumb or recover probably depends in part on the strength of the dose, but in part upon his having or not having some unsound organ which will not bear the congestion of the cold, or the quickened circulation of the hot, stage. The intemperate man is taken always at a disadvantage, and the chances of escape lessen with age. Another fact must be specially noted, as common to all epidemics—the poison, when it does not kill by sudden shock, remains for a variable period, in some shorter, in others longer, inert. The seed is sown, but takes time to germinate. The interval of real or apparent inaction is known as the period of *incubation*. It is not easy to fix the limits in these maladies. In C. it is thought to extend from three days to a week; in typhus fever from a few minutes or hours to a few weeks or months. The fact that there is this period of inaction, or incubation, helps to explain some apparent anomalies. The C., considered as a type of the class to which it belongs, has one or two other characters worth noting. It has been more than once preceded by the milder epidemic, influenza; it has given something of its own character to other diseases prevailing before, during, and after its own visitations; it has seemed to require time to develop itself in the several places which it attacks, for several weeks will sometimes elapse before the weekly deaths exceed one or two; and it is certainly, as a general rule, fostered and promoted by overcrowding and uncleanness.

Regarding the alleged similarity of C. to the plague, leaving the medical aspect of the case out of consideration, the statistical results hardly justify this view. The four great outbreaks of the plague of the 17th century in Lond. were:

1603, when the deaths from <i>Plague</i> were	36,269 ; from all causes,	42,042
1625 " "	35,417 "	54,265
1636 " "	10,400 "	23,359
1665 " "	68,596 "	97,306

Mean of those years 37,671 " 54,243

The great outbreaks of the Cholera (excluding that of 1831-32, of which we have not authentic returns) have been :

1849, when deaths in Lond. were Cholera	14,125 ; from all causes,	68,755
1854 " "	10,738 "	73,697
1866 " "	5,596 "	80,453

Mean of those years 10,153 " 74,301

Ditto ditto (including diarrhoea)... 13,550 " 74,301

As compared with the deaths from all causes, those from the plague were 69 p.c. Those from C. are less than 14 p.c., and with diarrhoea included less than 18 p.c. Nearly as many died from the plague in 1666 as from all causes (cholera included) in 1849.

The *Gresham* L. has made a contribution to the statistics of mort. of ins. lives as arising from C. Out of the first 1000 deaths among the ins. in that Co., 7 were reported as having died from C. Out of the second 1000, no less than 32 were attributed to C. In the report of the med. officer of the Co., Mr. A. H. Smee, presented in 1871, it is stated :—"This large increase is no doubt partly due to the epidemic of C. which swept along the shores of the Mediterranean during the summer of 1866."

In 1871, also, Mr. Harben pub. the mort. experience of the *Prudential* Life during the 4 years 1867-70. The deaths from Diarrhoea, Dysentery and Cholera (classified together) were at the rate of 413 to 10,000 *male*, and 420 in the like number of *female*, lives ins.

It is said to have been remarked in Paris and elsewhere, that copper-workers had a remarkable immunity in respect to the C. At a serious outbreak at Bagdad in 1871, all classes are said to have suffered except the workers in copper. We have already shown that copper-smelters suffered severely in Gt. Brit. in 1866.

In the summer of 1872 Mr. John Netten Radcliffe, "one of the medical inspectors who has for some years been charged with the duty of examining the communications with the Lords of the Council, as administrators of the Quarantine Act, and till recently of the Diseases Prevention Act," submitted to Mr. Simon, the medical officer of the Privy Council, a *Report upon the Recent Diffusion of Cholera in Europe*. This Report, which the *Times* designates as "a very remarkable" one, proves, almost to demonstration, that the C. epidemic which has been displaying itself in eruptions more or less serious in Persia, Russia, and other parts of Continental Europe, originated at the annual religious Hindu Fair at Hurdwar, in 1867, at which, it was calculated, "not less than 2,800,000 were present on the great day of the festival," and was carried by or through personal communication with the pilgrims to the various localities in which it has since been heard of. [PLAGUE SPOTS.]

In the Appendix to 33rd R. of Reg.-Gen., pub. 1872, Dr. Farr says :

No greater mistake can be made than to assert of Asiatic C., as is done with a kind of Oriental fatalism, by some popular writers, that C. is under no kind of control. Now it is, I believe, more completely under medical control than any other known epidemic disease; in the first place its propagating fluid is tangible, and can be destroyed; and in the second place the disease almost invariably begins as diarrhoea, which can, in the great majority of cases, be stopped by simple remedies. The disease here never decimates cities, except when its poison is diffused through their potable waters. To the practical applications of these well-ascertained scientific facts, it is due that Asiatic C., which in 1849 destroyed 53,293 lives, in 1854 was only fatal to 20,097, in 1866 to 14,378 lives in E. and W.

At the 8th International Statistical Congress, held at St. Petersburg, in Aug. 1872, the questions relating to sanitary statistics involved a discussion on the C. of great interest and animation. Mr. Samuel Brown, in his report on the Congress, read before the Statistical So. of Lond., 19th Nov. 1872, says thereon :

The propositions in the programme, twelve in number, related to a variety of inquiries to be made as to the personal history, health, habits, etc., of the person attacked with the disease; and also as to the manner in which he first caught it, and the results of the medical treatment, and minute questions as to the locality invaded, its sanitary and atmospheric condition, and the mode in which the disease appeared and spread. The subject, together with the report on syphilis, was referred to a Sub-Section, under the presidency of M. Middendorf, and various alterations made in the questions proposed. On being brought before the General Assembly, by Drs. Benezet and Bredow, another lively debate ensued, some being of opinion that the questions were too long and complicated. M. Castiglione proposed that they should be referred to the Permanent Commission to revise; but an amendment was carried, to the effect that medical men and statisticians should take as a guide, as far as possible, the programme now proposed, carry it into effect in the mean time, and report to the next Congress how far it is capable of practical application to throw light on these two calamitous diseases. He (M. Castiglione) also proposed that at the next Congress a larger number of medical men from different countries should be called together, to constitute a separate Section for Medical Statistics.

At the present time [Nov. 1872] epidemic C. is making considerable ravages in Austria.

During the autumn it prevailed with some severity in Russia.

CHOLERA, ASIATIC, DEATHS FROM (Order, ZYMOTIC ; Class, *Miasmatic*).—The deaths from this cause in England present considerable, and very sudden, fluctuations. For the purposes of comparison and future reference, we give the following T. of the deaths regis. over a period of 33 years [a generation]. This T. includes under C. the deaths

from *English C.* ; the deaths from *Diarrhœa* are shown separately. The reason for their being included here is abundantly shown in the preceding art.

TABLE SHOWING THE MORT. BY CHOLERA AND DIARRHŒA IN *England* AND IN *London*, FROM THE YEAR 1838 DOWNWARDS.

Years.	ENGLAND.				LONDON.			
	Deaths Regis. from		Ann. Mort. : Deaths to 1,000,000 Living.		Deaths Regis. from		Ann. Mort. : Deaths to 1,000,000 Living.	
	Cholera.	Diarrhœa.	Cholera.	Diarrhœa.	Cholera.	Diarrhœa.	Cholera.	Diarrhœa.
1838	331	2482	22	162	15	393	8	215
1839	394	2562	25	165	36	376	19	201
1840	702	3469	45	221	60	452	31	236
1841	443	3240	28	203	28	465	14	238
1842	1620	5241	100	325	118	704	59	353
1843	—	—	—	—	85	834	42	410
1844	—	—	—	—	65	705	31	340
1845	—	—	—	—	43	841	20	397
1846	—	—	—	—	228	2152	106	997
1847	788	11,595	46	676	117	1976	53	898
1848	1908	11,067	110	638	652	1913	291	853
1849	53,293	18,887	3034	1075	14,137	3899	6182	1705
1850	887	11,468	50	645	127	1893	55	813
1851	1132	14,728	64	833	213	2574	90	1085
1852	1381	17,617	77	984	162	2375	67	983
1853	4419	14,192	244	784	883	2487	359	1011
1854	20,097	20,052	1094	1091	10,738	3147	4288	1257
1855	837	12,770	45	689	149	2049	58	804
1856	762	13,815	40	734	152	2244	59	866
1857	1150	21,189	60	1111	214	3115	81	1181
1858	673	13,853	35	719	131	2035	49	759
1859	887	18,331	45	940	193	3301	71	1211
1860	327	9702	17	494	51	1373	18	496
1861	837	18,746	42	944	168	2611	60	928
1862	511	11,112	25	552	106	1736	37	607
1863	807	14,943	40	735	159	2384	55	821
1864	934	16,432	45	798	156	2894	53	981
1865	1291	23,531	62	1133	196	3611	65	1206
1866	14,378	17,170	685	818	5596	3147	1842	1036
1867	922	19,851	—	—	240	2969	—	—
1868	1498	29,821	—	—	324	4021	—	—
1869	702	19,903	—	—	219	3395	—	—
1870	1065	25,311	—	—	239	3719	—	—

[We do not calculate the ratios of deaths to pop. in these later years, because the pop. has to be adjusted in the light of the census of 1871.]

The following additional Tables will be found valuable for future reference :

TABLE SHOWING THE DEATHS FROM CHOLERA AND DIARRHŒA IN *London* AND IN EACH DIVISION OF *England* DURING THE YEARS 1849, 1854, AND 1866.

Divisions, etc.	Pop., 1861.	CHOLERA.			DIARRHŒA.		
		1849.	1854.	1866.	1849.	1854.	1866.
London	2,803,989	14,137	10,738	5596	3899	3147	3147
South-Eastern Counties	1,847,661	3209	1581	865	1469	1600	956
South-Midland Counties	1,295,515	1517	1229	111	913	1240	699
Eastern Counties	1,142,562	879	961	501	774	1118	519
South-Western Counties	1,835,714	4564	338	631	1086	953	892
West-Midland Counties	2,436,568	5174	892	139	2403	3104	2007
North-Midland Counties	1,288,928	584	247	83	764	967	772
North-Western Counties	2,935,540	8836	1916	2991	4206	4404	4518
Yorkshire	2,015,541	6346	624	358	1955	2179	1964
Northern Counties	1,151,372	3474	632	610	789	824	1135
Monmouth and Wales...	1,312,834	4573	939	2493	629	516	561
England and Wales...	20,066,224	53,293	20,097	14,378	18,887	20,052	17,190

TABLE SHOWING DEATHS IN Lond. AND EACH DISTRICT TO 10,000 PERSONS LIVING.

Divisions, etc.	CHOLERA.			DIARRHŒA.		
	1849.	1854.	1866.	1849.	1854.	1866.
London	62	43	18	17	13	10
South-Eastern Counties.....	20	9	4	9	9	5
South-Midland Counties	12	10	1	8	10	5
Eastern Counties.....	8	8	4	7	10	4
South-Western Counties	25	2	3	6	5	5
West-Midland Counties.....	25	4	1	12	14	8
North-Midland Counties	5	2	1	6	8	6
North-Western Counties	37	7	9	17	17	14
Yorkshire.....	36	3	2	11	12	9
Northern Counties	37	6	5	8	8	9
Monmouth and Wales	39	8	18	5	4	4
England and Wales	30	11	7	11	11	8

TABLE SHOWING THE DEATHS AND RATE OF MORT. FROM CHOLERA AND DIARRHŒA IN 1849, 1854, AND 1866, OF MALES AND FEMALES AT DIFFERENT AGES.

Ages.	DEATHS FROM CHOLERA.						DEATHS FROM DIARRHŒA.					
	Males.			Females.			Males.			Females.		
	1849.	1854.	1866.	1849.	1854.	1866.	1849.	1854.	1866.	1849.	1854.	1866.
All Ages.....	26,108	9860	6995	27,185	10,237	7383	9637	10,211	8840	9250	9841	9330
0	3866	1984	1517	3470	1659	1361	6393	7943	7016	5652	6995	6105
5	2458	930	772	2358	856	692	292	148	134	296	146	142
10	1349	456	395	1217	353	311	109	57	50	110	57	38
15	2578	984	547	2573	936	587	188	113	77	222	141	86
25	3837	1292	824	4303	1492	1043	232	109	86	294	223	150.
35	3712	1364	804	4068	1575	1100	259	120	113	325	208	173
45	3417	1153	887	3387	1222	883	333	197	175	331	217	190
55	2605	919	647	2909	1077	704	506	326	304	510	400	329
65	1615	546	380	1954	723	478	679	556	405	773	634	509
75	576	208	122	827	302	187	521	523	398	601	663	477
85	70	24	9	97	40	34	119	112	79	124	149	127
95 and upwards..	2	—	1	4	2	3	5	7	3	9	8	4
?	28	—	—	18	—	—	1	—	—	8	—	—

Ages.	DEATHS FROM C. TO 10,000 LIVING.						DEATHS FROM D. TO 10,000 LIVING.					
	Males.			Females.			Males.			Females.		
	1849.	1854.	1866.	1849.	1854.	1866.	1849.	1854.	1866.	1849.	1854.	1866.
All Ages.....	30.2	10.8	6.8	30.0	10.8	6.8	11.1	11.2	8.6	10.2	10.4	7.6
0	33.2	16.2	10.3	29.5	13.6	9.3	54.9	64.7	47.8	48.0	57.3	41.7
5	23.2	8.6	6.2	22.3	7.9	5.6	2.8	1.4	1.1	2.8	1.3	1.1
10	13.8	4.6	3.5	12.8	3.6	2.8	1.1	.6	.4	1.2	.6	.3
15	15.4	5.7	2.9	14.2	5.2	3.0	1.1	.7	.4	1.2	.8	.4
25	20.3	9.5	5.9	30.3	10.2	6.2	1.8	.8	.6	2.1	1.5	.9
35	38.3	13.0	7.9	40.5	14.0	8.3	2.7	1.1	1.0	3.2	1.8	1.3
45	49.5	14.9	9.1	46.7	14.9	9.4	4.8	2.5	1.8	4.6	2.7	2.0
55	58.7	18.0	10.2	60.4	19.6	12.0	11.4	6.4	4.8	10.6	7.3	5.6
65	64.4	19.7	13.1	67.8	21.8	10.9	27.2	20.1	14.0	26.8	19.2	11.6
75	59.7	20.8	11.0	71.7	23.6	13.0	54.0	52.3	36.0	52.1	51.8	35.1
85	49.8	18.9	7.3	48.7	20.8	17.2	84.7	88.0	63.7	62.3	77.4	64.2
95 and upwards..	31.1	—	24.6	33.0	20.0	30.3	77.7	136.1	73.8	74.2	79.9	40.4

[We have endeavoured in this and the preceding art. to deal exhaustively with the subject of C., and for this reason—it is the only element menacing the stability of life ins. offices with which careful management cannot combat. We believe the reader will be led to the conclusion, after a careful perusal of the preceding details, drawn from all available quarters, that C. is now nearly as much under human control as any of the maladies which afflict humanity; and if that be so, L. offices can best consult their own safety by aiding the advancement of enlightened legislation and practice in relation thereto.]

CHOLERA, ENGLISH (*Gastro-enteritis mucosa*).—A milder form of the malady than that usually spoken of as Asiatic or Epidemic C. The English or European form of C. is

accompanied by bile ; the Indian is without bile or urine.—*Hoblyn*. It is supposed to have been this variety which was noticed by Sydenham in 1669.

Dr. Guy speaks of it as having paid our Lond. ancestors visits of five or six weeks in the months of Aug. and Sept. during the 17th century. It is set down by our Reg.-Gen. simply as "C." It appears to be especially aggravated by the circumstances attending an epidemic of Asiatic C. In 1847 the deaths were 52 ; in 1848 (marking the beginning of an epidemic), 292 ; in 1849 (C. epidemic), they rose to 6209 ; and in the following year fell to 55. The preceding returns embrace all the deaths from it in England.

CHOLERA FLUX.—See CHOLRINE.

CHOLERA INFANTUM.—A form of disease which has long been prevalent in American cities. It prevailed in Lond. in the summer of 1846. [CHOLERA, ASIATIC.]

CHOLERA MALIGNA.—An epidemic malady due to an atmospheric poison, but communicable by infection, characterized by symptoms of collapse allied to asphyxia, and by profuse vomiting and purging. *Cholérine* is a term applied to the milder form of the disease. *Cholera asphyxia* is a term used to characterize the state of collapse in fatal cases.

CHOLERAIC DIARRHŒA.—A cause of death frequently returned to the registrars during the C. epidemics in Gt. Brit. [See CHOLERA, 1849.]

CHOLRINE.—A material substance, analogous in its nature to the substances which produce, under given circumstances, smallpox, cowpox, syphilis, and erysipelas ; and by means of which C. epidemic is diffused. It has been called *Cholérine* ; but Dr. Farr proposed in 1868, with a view to avoid ambiguity, to write it *Cholrine*. It is very frequently spoken of as the *Cholera Flux*. Dr. Snow advanced the view in 1849 [CHOLERA, ASIATIC] that the evacuations containing this matter, distributed by contact, or through water, were the sole means of propagating C. Dr. Richardson contends that the C. matter is an "alkaloidal organic poison, which, soluble in water, but admitting of deposit on desiccation, passes easily from one person to another," under the agency of certain peculiar physical states.

Dr. Farr has remarked that it may appear at first sight impossible that the C. flux of one or more patients should produce any effects in the waters of a river like the Thames. But living molecules, endowed with the powers of endless multiplication, are inconceivably minute, and may be counted by millions in a drop of water. Again :

The infection power of cholera liquid is essentially transitory ; it is developed in given circumstances in its intenser form, and in a community as well as in an individual—in India as well as in England—it grows as well as declines by a law of its own ; it is epidemic only for a time, and by periods of years. It has its seed-time and its harvest in each locality ; and the air or the water which on one day is poisonous may a few days after be harmless. There is an essential difference between zymotic venom and a metallic poison like arsenic.

In its weakest form *Cholrine* produces diarrhœa in a great number of persons ; but in every pop. a large number of people appear to resist its influence. They are insusceptible. The cases of attacks of the same person twice in this as in some other zymotic diseases are rare.—*Report on Cholera Epidemic*, pub. 1868.

CHOREA SANCTI VITI (from the Greek, *dancing*, hence called *skelotyrbe* ; *St. Vitus's Dance*).—Functional derangements of the motor nerves, resulting in irregular jerking movements, more or less interfering with the voluntary actions.

CHOREA, DEATHS FROM (Class, LOCAL ; Order, Diseases of *Nervous System*).—The deaths from this cause are very few in England, and show some fluctuations. In ten consecutive years they were as follows :—In 1858, 53 ; 1859, 55 ; 1860, 66 ; 1861, 71 ; 1862, 52 ; 1863, 63 ; 1864, 73 ; 1865, 88 ; 1866, 63 ; 1867, 50. Over a period of 15 years ending 1864 they averaged rather over 3 to each million of the pop. living. The deaths of 1867 were 21 males and 29 females, spread over the ages of youth and the later middle age.

CHOSE IN ACTION [otherwise called *Chose in Suspense*].—A thing of which the man has not the possession or actual enjoyment, but only a right to recover, by action or other proceeding at law. A well-known rule of the Common Law is that no possibility, right, title, or thing in action can be granted to third parties ; for it was thought that a different rule would be the occasion of multiplying litigation—it would in effect be transferring a lawsuit to a mere stranger.—*Wharton*. A sum insured under a pol. to be paid only on the happening of a particular event was regarded by the Common Law therefore as being incapable of assignment ; and this, too, even although the sum ins. is made payable to the executors, administrators, or "assigns" of the ins. The Statute Law has now remedied this, as we have already shown. [ASSIGNMENT OF POL., *Life*.]

CHRISOMES.—One of the regular entries in the early Bills of Mort. was "Chrisomes and Infants," thus substituting the age of the deceased for the disease. *Chrism* is a Greek word, signifying an ointment used as an holy unguent to anoint the cloth which infants wore until they were christened—usually at the end of the month. If the child died within that period, it was called a *Chrisome*. The priests of the Greek and Romish Churches attached importance to this rite. Graunt observes that as the number of deaths put down to this head decreased, the number set down to convulsions increased. By 1726 the designation had disappeared from the Bills.

CHRISTENING INS.—During the reign of Queen Anne—that is, in the early part of the last century—a strange mania sprang up in favour of ins. projects of every conceivable variety. Amongst them ins. offices of this class, which, however, appear to have sprung out of

BIRTH INS., then very prevalent. The first we meet with is the *Baptismal Office* of Assu., the announcement of which furnishes the following outline of the nature of the bus. Every subs. was to pay 2s. 6d. towards each infant baptized until he had one of his own, when he was to receive £200, "the interest of which is sufficient to give a child a good education; and the principal reserved until he comes to maturity." Various similar schemes followed, of which we shall proceed to give a chronological outline. We may fairly assume that many more such projects existed than at this remote period we are able to trace.

The *Profitable So.*, at the Wheatsheaf, by Tom's Coffee House, issued in Nov., 1710, the following: £250 to be paid on the Baptizing a Child, being a new proposal by the *Profitable So.*; which, by only paying 2s. 6d. for a pol., and 2s. 6d. towards each claim, entitles you to the sum above mentioned. There is also a second so., where, paying only 1s. contribution, you receive £100.

About the 28th of the same month the *Union So.* (No. 3), was opened at the Corner of Rupert St., near Upper End of Haymarket, being "a new office on Baptism." No details given.

On the following day another Baptism office was opened, at the *Hand and Pen*, Earl Court, St. Giles. Pol., 2s. 6d.; contribution, 2s. 6d. each infant; claim, £250.

On the 4th Dec. there was opened at the Widow Pratt's Coffee House, Cateaton St., *A Faithful Office* for Ins. of Baptisms. Terms, 5s., 5s. and £500. And shortly afterwards another: half-terms and half-benefits.

During this month of Dec. there was issued the following remarkable advertisement:

At the several offices for ins. on marriages hereunder named are now also opened for paying 250l. in the first, 100l. in the second, say on the Baptizing children, or as to such of Her Majesty's Protestant subjects who do not baptize their children, on proof to be made that the child was alive three days after the birth thereof. The conditions for the 250l. are that each subscriber pay 2s. 6d. for each pol., and 2s. 6d. to each claim for the 100l. Every subscriber to pay 2s. for a pol. and 1s. to every claim. The number of subscribers to be 2100 in each office. Proposals at large may be had at Mr. Clement, "Wheat Sheaf," by Tom's; Mr. Simson, "Golden Lyon," Drury-lane; Mr. Baker, "Bourns Coffee House;" Mr. Morse, "Hargreaves Coffee House;" Mr. Edwards, "King's Head Court, Petticoat-lane;" Mr. Blackmore, "Black Swan," Shoreditch.

On 6th Feb., 1711, it was announced by *Profitable So.*, at Wheatsheaf, that the trustees appoint "all pol. for claims on Baptizing Children to be henceforth made out for 3 kal. months; all for dividends for 2 kal. months. . . . Entered already in the said societies, 1835."

Early in March, 1711, was passed the 9 Anne, c. 6, sec. 57 of which imposed a fine of £500 on every person erecting or setting up any office of this character in future. The enterprise consequently died out, and has since remained a matter of history only.

[GAMBLING INS.]

CHRISTENINGS.—Before the General Registration Act came into working operation in 1836, the system of regis. of births, although enjoined by the Canons of the Church, and also by the Statute Law as early as 1695 [BIRTHS, REGIS. OF], had become very lax; and indeed the regis. of the christening was regarded much the same as the regis. of the birth, although we now realize the fact that the two things are very different. Baptism, when it ceased to be immediate upon birth, as enjoined according to the rites of the Romish Church, could no longer be certain. The infants who died within the first month after birth—till which period baptism was generally delayed by the practice of the Protestant Church—never got into the returns of christenings at all; while several sects of Dissenters discarded baptism altogether. When it first became the practice to enter the christenings in the B. of Mort. does not appear. They are not entered in the Lond. Bill we have given for 1563; but they are in that for 1582. [BILLS OF MORT.] So that this last date may perhaps be regarded as about the orig. of the practice.

The number of christenings recorded became, and remained until early in the present century, an important element in estimating the pop., and also in predicting its increase or decrease. But, as we have elsewhere shown [CENSUS], the test was a fallacious one.

The first writer who used the returns of christenings in relation to pop. estimates was Graunt. He soon found how imperfect they were for the purpose; and he hit upon the cause of their imperfection with marvellous sagacity. Here is what he says in his *Natural and Political Obs.*, 1661:

For that there hath been a neglect in the accounts of the christenings is most certain, because until the year 1642 we find the burials but equal with the christenings, or near thereabouts; but in 1648, when the differences in religion had changed the Government, the christenings were but two-thirds of the burials. And in the year 1659 not half, viz., the burials were 14,720 (of the plague but 36), and the christenings were but 5670; which great disproportion could be from no other cause than that above mentioned; forasmuch as the same grew as the confusions and changes grew.

He then follows up a train of statistical reasoning, and states his conclusions thus:—"Wherefore I conceive that the true number of the christenings, anno 1659, is above double to the 5670 set down in our bills,—that is, about 11,500; and then the christenings will come near the same proportion to the burials, as hath been observed in former times." He then enlarges upon the subject as follows:.

The decrease and increase of people is to be reckoned chiefly by christenings, because few bear children in Lond. but inhabitants, though others die there. The accounts of christenings were well

kept until differences in religion occasioned some neglect therein, although even these neglects we must confess to have been regular and proportionable. By the numbers and proportions of christenings, therefore, we observe as followeth, viz. :—*First*, that when from Dec., 1602, to March following, there was little or no plague, then the christenings at a medium were between 110 and 130 per week; few weeks being above the one or below the other; but when from thence to July the plague increased, that then the christenings decreased to under 90. *Secondly*, the question is whether teeming women died, or fled, or miscarried? The latter at this time seems most probable, because even in the said space between March and July there died not above 20 per week of the plague; which small number could neither cause the death or fright of so many women, as to alter the proportion one-fourth part lower. Moreover, we observe from the 21st July to the 12th Oct. the plague increasing, reduced the christenings to 70 at a medium, diminishing the above proportion down to two-fifths. Now the cause of this must be flying and death, as well as miscarriages and abortions; for there died within that time about 25,000, whereof many were certainly women with child; besides, the fright of so many dying within so small a time might drive away so many others as to cause this effect.

Under POPULATION we shall have occasion to review many other such estimates.

CHRISTIAN ALLIANCE LIFE.—This Co. was projected in 1847, and regis.; but no further steps were taken.

CHRISTIAN ALLIANCE MUT. LIFE ASSU. SO.—An asso. under this title was prov. regis. under the Joint-Stock Cos. Regis. Act in 1846, but it did not proceed further.

CHRISTIAN MUTUAL PROVIDENT LIFE AND SICKNESS SO., founded in 1846, and enrolled in 1847, under the F. Sos. Acts. The purpose of the So. is to supersede the numerous local and limited F. sos. which formerly sprung up in such numbers in Lond. and in the provinces. On this point the prosp. says:

By a general inst. we mean an inst. with head-quarters in Lond., and branches widely disseminating throughout the country. Mr. Neison considers that to make a F. so. permanently secure, a continued succession of young members is essential; and as these cannot be insured with certainty in any one place, it is important to ally various places together. Such an arrangement has moreover other material recommendations. Members of F. sos. are often seriously inconvenienced when circumstances compel them to remove from one place to another, by having either to relinquish their benefit club altogether, or to remain connected with it at a great distance, which, should sickness happen to them, will entail serious disadvantage. As with L. assu. sos., so with F. sos., the members should be altogether unrestricted as to their right to reside wherever their general interests may recommend; in fact, their club should be wherever they require it.

The So.—the business of which embraces sickness ins., annu., life ins., and endow.—has Mr. Samuel Morley, M.P., for its Treasurer. Amongst its Trustees is Mr. John Crossley, of Halifax. The Chairman for many years was the late Rev. J. B. Owen. Mr. Neison was formerly Consulting Act. Mr. A. G. Finlaison now occupies that position. Mr. Burls has been Sec. from the commencement. Its progress has been very rapid and satisfactory. Commencing with 30 members, and with a sum of £16 13s. 4d. in cash, it had up to 1869 enrolled 25,679 members; while its funds then stood at over £77,000 invested. It had at that date paid £141,354 in claims made up as follows:—Allowance during sickness, £33,294; paid annuities, £608; under life pol., £31,312; as endowments, £76,138. It has declared several bonuses, not only on the life, but on the sickness departments. There is prob. no more useful an asso. in existence at the present moment. In 1858 it changed its name to the *Mutual Provident Alliance*, under which head we shall notice its later progress. [FRIENDLY SOS.] [SICKNESS.]

CHRISTIAN UNION MUTUAL.—A scheme under this title was regis. in 1849, the object of which (*inter alia*) was to provide a fund for aged ministers.

CHRISTIANIA, the capital of Norway, built in 1624 by Christian IV. of Denmark, to replace Opslo (the ancient capital, founded 1058), which had been destroyed by fire. On 13th April, 1858, the city suffered again severely by fire, the loss being estimated at about £250,000, a good deal of which fell upon the Brit. fire offices. Dr. Price had his attention called to Norway on account of the remarkable longevity of its inhabitants. In the *Annual Register* for 1761 there appeared the following statement:—"In 1761 the burials in the district of Christiania amounted to 6920, and the christenings to 11,014. Among those who died, 394—or 1 in 18—had lived to the age of 90; 63 to the age of 100; and 7 to the age of 101. [LONGEVITY.]

CHRISTIE, ALEXANDER, was Man. of *Bon Accord* from its commencement, down to its amalg.

CHRISTIE, CHARLES, Man. of *Scottish Imperial* in Edin. since 1866. He commenced his ins. career with the *Home and Colonial*, and on that co. relinquishing its L. bus., he accepted his present appointment.

CHRISTIE, DAVID, Man. of Edin. Branch of *Northern Ins. Co.* since 1867. He was trained in the *Sun F. Office*, where, after many years' employment, he passed to the claim department, in which he obtained a large experience. He read before the Inst. of Act., in 1859, a paper, *On the Settlement of Losses by Fire under Specific and Average Policies, separate and combined*. The paper is printed in vol. viii. of *Assu. Mag.*, and is referred to in various parts of this work.

CHRISTIE, ROBERT (No. 1), was appointed Act. of the *Universal L.*, on the estab. of that Co. in 1834, under the 12th clause of the D. of Sett. of the So., which is as follows:

That there shall be an act. of the So., and that Robert Christie, of Cornhill, in the City of Lond.; Esquire, shall be the first or present act.; and an act. shall be chosen ann. by the directors for the time being within 14 days after the second Wednesday in the month of May in every year; and the said Robert Christie, or any future act., may be elected to that office in each of the several successive years. And it shall be the bus. of the act. for the time being to furnish the directors with all necessary information and advice relating to assu., and with such rates, calculations, and other matters of computation as shall be required of him, and to keep the accounts of the So., and to prepare and issue

proposals and prosp. for the public, under the orders of the directors, and to attend all general and special general meetings of the members for the time being, and all board or other meetings of the directors for the time being, and to take minutes of all proceedings at such meetings, and to keep the accounts, and to attend at the office of the said So. at such periods as the board of directors shall appoint for the purposes of receiving proposals of ins. and sales, and of transacting the other bus. of the said So. ; and to perform such other bus. in such manner as the board of directors shall from time to time require.

We do not recall any other deed in which the duties of act. are so precisely defined.

We believe Mr. Christie was the first Act. who compiled a T. of mort. for European life in India ; and in this he was prob. assisted by the late Mr. Griffith Davies. [INDIA.]

In 1838 he read before the Statistical So. a paper, *On the Rate of Mort. amongst Officers Retired from the Indian Army*,—a paper upon which we shall have to speak under INDIA.

He was appointed Hon. Sec. of the Committee of Actuaries and Managers appointed in 1838 to compile the data upon which the *Experience T.* (No. 1) was founded ; but he died very soon after the commencement of the undertaking.

CHRISTIE, ROBERT (No. 2), was Man. of the *Scottish Equitable* from its commencement in 1831 down to 1861, when he retired on a pension of his full salary. He had been trained as an accountant.

Mr. Christie's first pamp. on ins. questions was pub. in 1840, *An Exposure of Unsoundness of the Western Annu. So. ; and of Certain Kindred Sos. estab. in England and Ireland for the same Purpose*. This pamp. was written in a clear and vigorous style, carrying the impress of honesty of intention upon its face. We shall speak of it again in the hist. of the asso. against which it was mainly directed.

In 1852 he pub., *Letter to the Rt. Hon. Joseph Henley, M.P., President of the Board of Trade, regarding Life Assu. Institutions, with Abstracts of all the Accounts Regis. by Lond. Life Assu. Cos. from the Passing of the Act 7 & 8 Vict. c. 110 (5 Sept., 1844) to 5 Feb., 1852*.

It was the appearance of this pamp. that gave rise to what is now known as the "Insurance Controversy." The events of that period have become matter of hist., and will be dealt with fully in our hist. of LIFE INS., under this date.

In 1854 Mr. Christie prepared and pub., *View of the Affairs of the Professional Life Assu. Co., as at 31st Dec., 1853, and remarks thereon*. He had the discernment to discover, at that early period, that the affairs of this Co. presented elements of danger.

In 1856 Mr. Christie pub., *Life Assu. : Abstracts of all the Accounts Regis. by Life Assu. Cos. in the U.K. from 5 Sept., 1844, to 5 March, 1856 ; being an Analysis of Three Returns made to the House of Commons by the Registrar of Joint-Stock Cos., in the Years 1849, 1852, and 1856*. Of this pamp. we shall also speak in our hist. of LIFE INS.

The labour involved in the preparation of these pamp. was very considerable ; and although we do not think they were productive of unmixed good, they brought their compiler into wide repute.

About 1857 Mr. Christie pub., *View of the Causes of Deaths Regis. in E. and W. in the Years 1848, 1849, 1850, 1851, 1852, 1853, and 1854, compiled from Reports of the Reg.-Gen. applicable to those Years*. This we shall speak of under DEATHS, CAUSES OF.

On the occasion of Mr. Christie's retirement into private life, the *Asso. of Managers of L. Assu. Offices in Scotland* passed the following resolution, under date 21st Feb., 1861 :

Looking to the length of time during which Mr. Christie has been connected with the Managers' Asso., to the satisfactory and agreeable intercourse they have had with him, to the valuable services he has rendered to the cause of L. assu., and to the consistent and determined opposition which he has uniformly shown to all unsoundness in the principles, and all irregularities in the practice, of L. assu. offices, this meeting are unanimously of opinion, that the retirement of Mr. Christie is a loss which they all regret. While his brother managers have much satisfaction in the reflection that he is retiring from an inst., which he has so long and so ably conducted, in the full enjoyment of all his faculties, and with the well-earned remuneration of his faithful services, they would express towards him their friendly sympathies and regards, and their anxious and earnest wishes for his future welfare and happiness. [INDEPENDENT WEST MIDDLESEX.]

CHRISTIE, ROBERT, JUN. (son of the above), was Sec. of Edin. branch of *Northern* for many years. He retired from that position a few years since. We have to thank him for some of the details in the preceding art.

CHRISTISON, DR. ROBERT, the able medical adviser of the *Standard Life*. He pub. in the *Monthly Journ. of Med. Science* for Aug., 1853, *An Investigation of the Deaths of the Standard Life Assu. Co., for the quinquennium 1845-50, of which we shall speak fully under STANDARD LIFE, MORT. EXPERIENCE OF*. [CHOLERA, 1853.]

CHRISTMAS, C. G., Sec. of *Reversionary Int. So.* from 1836 to 1871, when he retired. He died in 1872, aged 78.

CHRONIC DISEASES (from the Greek, signifying *time*).—Diseases of long duration and slight severity, as distinguished from *acute* diseases of short duration.

CHRONICLE, THE.—A sprightly and well-edited ins. newspaper, until recently pub. in Chicago, but now pub. in New York. The paper was estab. in 1866, and is conducted by Mr. John J. W. O'Donoghue.

CHRONOLOGY.—The science of time. As the basis of this work is *chronological* [the arrangement of the subjects only being *alphabetical*], it is necessary to offer a few explanatory remarks here. So long as the Catholic or *old style* was in force, the day of the Annunciation of the Virgin Mary, or Lady Day (March 25), was reckoned as the first

day of the year. The *new style* was adopted 1st Jan., 1752. This change was made by authority of 24 Geo. II. c. 23. In Scotland the year began on 1st Jan. previous to the alteration in England. This difference caused great practical inconvenience ; and Jan., Feb., and part of March frequently bore two dates, as we find in old records, 1745-1746, or 1745-6, or 174 $\frac{5}{6}$. Such a reckoning constantly led to chronological mistakes ; for instance, we popularly say "the Revolution of 1688," as that great event happened in Feb. of the year 1688, according to the then mode of computation ; but if the year were held to begin, as it does now, on the 1st of Jan., it would be the revolution of 1689. We have experienced difficulties of this kind in the progress of this work, but we have endeavoured to make them clear. [YEAR.]

CHRONYK, VON VLAENDIRN.—The *Chronicle of Flanders*, which purports to give an account of the practice of marine ins. as early as 1310. Some of the best writers do not regard the Chronicle as authentic in this respect. [BRUGES.] [FLANDERS.] [NETHERLANDS.]

CHRYSTAL, D. J., Act. of *Scottish Commercial* since 1867. Was orig. trained to the law, but preferring the ins. profession, entered the *Scottish Provident* about 1862, and passed his examination in the Faculty of Actuaries before receiving his present appointment.

CHURCH BENEFICE.—See ECCLESIASTICAL BENEFICE.

CHURCH OF ENGLAND L. AND F. ASSU., TRUST, AND ANNU. INST., founded in 1840, under the title of the *Church of England L. and F. Assu. Co.*, with an authorized cap. of £1,000,000, in 20,000 shares of £50. While the Co. was in process of formation overtures were made for uniting with it the bus. of the then recently founded *City of Lond. Annu. and Loan Co.* The negotiations eventuated in an agreement bearing date the 22nd April, 1840, by which the *Church of England* took over the contracts and engagements of the *City of Lond.*, and modified its title so as to indicate more prominently the annuity feature.

The orig. prosp. contained the names of a most powerful list of patrons and honorary directors, among the former his Grace the Duke of Beaufort, the Bishop of Gloucester and Bristol, and the Bishop of Worcester. There was an ordinary Board of Directors, and a Man.-Director, Benjamin Jackson, Esq. The clerical sec. was the Rev. C. Packman, "Priest in Ordinary to Her Majesty," etc. The Sec. was Mr. Wm. Emmens. The document set forth :

Many distinctive classes of society have formed their ins. cos. depending in a great degree upon the aid and patronage of their respective members, and especially adapted to the circumstances of those parts of the community which they more immediately represent. The Church of England requires the estab. of a similar inst. on an enlarged and liberal scale, not confined in the benefits it offers to one class of its great community, but calculated to meet the wants and demands which the social relations and complicated arrangements of property render so necessary and advantageous to all its members. To supply this desideratum, and to extend the advantages of a well-regulated system of L. assu. among its clergy, members, and friends, is the immediate object of this asso. ; its resources not being derived from the clergy alone, but from the laity also ; its sphere of usefulness and its success under discreet and sound management will be co-extensive with the great interests it represents.

The members of the Church possess more than ordinary power and influence to promote all the great and beneficial objects which such an inst. is calculated to effect ; and the directors of this Co., in undertaking its formation, have determined to base it upon a principle which cannot fail to give it peculiar claims to the zealous support of that great and influential body.

It is set forth that by the constitution of the Co., *one clear tenth of the entire profits* of the asso. were to be applied to the formation of a fund to be called the "CLERGY FUND," to be vested in trustees (one-third of whom to be selected from the Clergy), "to constitute an increasing and perpetual provision for distressed and deserving clergymen, and their widows and children, when recommended by the Bishops or the Clergy of their respective localities ; and generally to meet such other charitable objects connected with the clergy as may from time to time arise." But "this fund not being immediately available for *all* these benevolent purposes, it is contemplated to anticipate one of its chief objects by ins. the lives of necessitous clergymen, and enabling congregations to do so, or otherwise providing for them, *at a reduced prem.*"

The peculiar advantages thus accruing to the clergy will, it is confidently hoped, induce them to exert their salutary influence to promote these charitable objects, that by their co-operation the Co. may have the means of diffusing more widely the boon offered to their less fortunate but deserving brethren. The laity and all those who are attached to the Church, and the benevolent principles which it inculcates, will doubtless be animated by the same feeling.

Regarding foreign residence and travel there was the following :

Ins. may be effected on the lives of persons resident in any part of the world, on more moderate terms than are generally charged by other respectable offices ; *but the assured, not being mariners by profession, may, without extra prem., go abroad in time of peace in a decked vessel to and from any place in Europe not subject to the Quarantine Laws, or affected by epidemic or endemic diseases.*

Then the following somewhat novel provision : "Unopposed probates of the Diocesan Courts may be held sufficient to entitle claimants to receive or recover the amount of pol. without the expense and delay of a prerogative probate." Next, under head of "Trusts" :

The peculiar adaptation of a public co. to the administration of trusts, and the preference it has to the agency of individuals, is now generally acknowledged. The ample guarantee it offers for the faithful and diligent discharge of those duties required to carry out properly and effectively "testamentary and all other trusts" cheaply and securely, which are now too frequently long litigated, expensively executed, and from fraud or insolvency not performed at all, must recommend it as the best possible agency for bus.

This branch of the proposed bus. was never entered upon. In the F. department, "the residences and furniture of clergymen" were to be ins. 10 p.c. lower than the ordinary rates.

The D. of Sett. of the Co. bears date 2nd Feb., 1841. It recites the arrangement with the *City of Lond. Annuity and Loan Co.*, and confirms the same. It takes over all the engagements and liabilities of the *C. of England L. and F. Co.* It sets out the nature of the bus. to be undertaken by the Co., which included the "ins. of ships or vessels in dock, or in any haven, port, or harbour, or against loss or damage by fire." It appointed Mr. E. M. Elderton Sol. of the Co., and Mr. William Emmens its Sec. No female qualified to vote at any gen. meeting. If shares of any new cap. issued at prem., such prem. to be carried to the "Proprietors Fund." The limit of the sum to be ins. on any one life to be left to discretion of directors for the time being. Six funds to be formed, viz., "Proprietors Fund," "Fire Assu. Fund," "Parti. Life Assu. Fund," "Non-Parti. Life Assu. Fund," the "Trust Profit Fund," and the "Clergy Fund." Separate and distinct accounts of each of these to be kept. Another fund is afterwards provided for, to be called the "Ship Ins. Fund," but its creation was optional:

If at any time hereafter, in pursuance of the power hereinbefore for this purpose contained, the objects of the Co. shall be extended to the ins. of ships against loss or damage by sea, or other sea risks, either in connexion with such other bus. as is usually transacted by underwriters or otherwise, then in such case and immediately thereafter the board of directors shall form a seventh fund, to be called, etc.

This was no doubt a very prudent power at the time; but a far greater prudence has been shown in never entering upon this perilous bus.

In 1841 the Co. obtained a special Act of Parl.—4 & 5 Vict. c. xcii.—*An Act to enable the Church of England L. and F. Assu., Trust, and Annu. Co. to sue and be sued in the name of the Man.-Director or other Officer of the said Co.* This Co. is to sue in the name of its Sec. or any Director. If any individual shareholder sued, contributions to be made to him by other shareholders. The liability of shareholders is carefully defined. A list of the proprietors is periodically enrolled in the High Court of Chancery.

The D. of Asso. has been altered by special resolutions on various occasions, viz. in 1843, when the operations of the Co. were allowed to be extended "to such parts of the world beyond Gt. Brit. as to the directors for the time being may appear expedient or proper." In 1847 the date of ann. meeting was altered from March to June, to enable returns of Indian bus. to be included. In 1848, as to appointment of chairman. Again, same year, making divisions of profits quinquennial instead of septennial, and also providing for provisional bonus. In 1853, as to mode of dealing with proportion of profits carried to "Clergy Fund"; again, in 1858, as to same fund. In Sept. 1859 special powers were obtained from proprietors to take over bus. of *Schoolmasters and General Assu. So.* In 1868 powers were taken to hold gen. meeting in April or May. In 1871 alterations were made as to joint ownership of shares, also permitting investments to be made in other than the stocks of Gt. Brit., her Colonies and India; also the following:

That the granting of assu. on the lives of clergymen at reduced rates of prem. being found of greater general utility than the maintenance of the present restricted "Clergy Fund," all rules and regulations in the D. of Sett., and in previous resolutions of the Court of Proprietors, relating to the formation and maintenance of such fund, be and are hereby repealed and rescinded.

The present prosp. says, "Special grants are made from the shareholders' profits in aid of the prems. payable for clerical and scholastic life assu. in the proprietary branch. This arrangement does not therefore in any way affect the profits divisible amongst the ordinary parti. policy-holders."

In 1859 the bus. of the *Schoolmasters and General Assu. So.*, which was small, was trans. to this Co. The bus. of the Co. has been managed with much prudence from the commencement, to which the clear-headed foresight of the manager contributed not a little. It did not very frequently become involved in litigation, yet it added three leading cases to our law-books: (1) *Elderton v. Emmens*, in which the principle of hiring, or in other words the exact scope of appointments in D. of Sett. or under Art. of Asso., was determined; (2) the case of *Quirk v. Emmens*—an Irish case, in which the Co. set aside a pol. obtained by a fraudulent statement of the age of the ins., notwithstanding that "age had been admitted" on the pol.; (3) *Emmens v. Lang*, in which an important question in the attestation of deeds was decided.

In 1868 Mr. W. Emmens retired from the man. of the Co., and was succeeded by his son Mr. Stephen H. Emmens. At the close of 1871 the ann. income of the Co. from prems. was £75,779; from int. £21,215—total, £96,994. Total invested funds, £509,148.

CHURCH OF ENGLAND SCHOOLMASTERS.—This So. was founded in 1850, being enrolled under the Friendly Societies Acts as a provident inst. It afterwards became the *Schoolmasters and General*, which see.

CHURCH LEASES.—The Episcopal and Capitular Estates Act of 1854—17 & 18 Vict. c. 116—under which the values of life contingencies in connexion with Ecclesiastical Leases and Copyhold Enfranchisements are determined, excludes the use of the *Northampton T.* of mort. (sec. 12), and provides that no T. shall be used "less favourable to the expectation of life" than that of the *English Life T.* The whole subject will be discussed under LEASES FOR LIVES.

CHURCH LIFE ASSU. SO.—A co. under this title was prov. regis. on 16th Feb., 1855. It does not appear to have got beyond that stage.

CHURCH LIVINGS, VALUE OF.—See ADVOWSONS; also NEXT PRESENTATIONS.

CHURCHES [Parish and District].—The repair of Churches, exclusive of the chancel, falls upon the parishioners; and such repairs include replacement after damage or destruction by fire, whether the fire were accidental or otherwise. [ECCLESIASTICAL BENEFICES.] In Lond. there is a general custom for the parishioners to repair the chancel as well as the body of the church. Upon the churchwardens falls the responsibility of protecting churches by fire ins. We do not know how many churches there are in Gt. Brit., but prob. 20,000. There was and prob. still is a widespread impression that churches are very good risks from an ins. point of view. They have been accounted first-class risks even by the F. offices, and therefore ins. at 1s. 6d. p.c. Of late years they have become a very bad risk. Mr. Hartung, the Fire Superintendent of the *Imperial*, wrote to the *Times* under date 28th June, 1872, as follows:

I have ascertained that the average experience of all Fire offices in the ins. of churches shows a loss of at least 200 p.c. on the prems. received at 1s. 6d. p.c. Had the co. I represent declined all proposals on churches, it would have saved many thousands of pounds. In my opinion, as an underwriter, there is no risk more underrated than that of churches.

This is terse and to the point. One of the principal causes of the increased risk is the now general plan of heating churches, which is very frequently accomplished in a clumsy manner, viz. by brick pipe, or even iron flues carried close to the woodwork.

We have not the materials for compiling a list of churches burned—say since the Great Fire of Lond.—when 100 were destroyed, including St. Paul's Cathedral. The following is only a small contribution, mostly recent:

1795—St. Paul's, Covent Garden.	1862—Austin Friars Ancient Church.
1803—Great Tower over Choir at Westminster Abbey.	1864—Royal Savoy Chapel, Strand.
1841—Camberwell Church.	1867—Croydon Parish Church.
1852 (?)—Doncaster Parish Church.	1867—St. Paul's, Clifton.
1860—Kilburn Church, Maida Hill.	? —Spitalfields. [damaged.]
	1872—Roof of Canterbury Cathedral

CHURCHWARDENS.—It was a usual condition in early F. ins. pol. that the insured, in the event of a loss, should supply a certificate, signed by the minister, churchwardens, etc., of the parish in which the property was situate, that they believed the loss to be *bond fide*. We have already quoted such a condition *in extenso* under CERTIFICATE OF LOSS.

It has been held in several cases that where it is a condition of the pol. that the churchwardens shall certify as to the cause of the loss, this must be strictly complied with. The following is a brief outline of the more prominent of these.

In *Oldman v. Bewicke* (Man. of *Sun* F. office), before the Court of Common Bench on Appeal, in 1786, all the Judges pronounced the production to be a condition precedent.

In the case of *Routledge v. Burrell* (Man. of *Sun* F. office), before the Courts in 1789, the condition was upheld; although here it was endeavoured to be evaded by a side wind, viz. that the stipulations did not form part of the policy. [CONDITIONS OF INS.]

In the case of *Wood v. Worsley* [officer of *Phoenix* Fire], before the Courts in 1795, the same question was raised as in *Routledge v. Burrell*, and much in the same form; but the point was put to the jury in the following form:

Whether the production of a certificate so signed be a condition precedent to a recovery against the insurers on the policy? Or whether it be not sufficient to show that a certificate was produced, and signed by many reputable householders of the parish, and that the minister and churchwardens being applied to, *without any reasonable or prob. cause, wrongfully and unjustly refused to sign it*.

It was held by the jury that the minister and churchwardens did so wrongfully refuse; and a verdict was found for the plaintiff. But on Appeal in Error to the K.B., this judgment was reversed; that Court holding the production of the certificate to be a condition precedent, and that it was immaterial that the minister and churchwardens *wrongfully* refused to sign the certificate. The document must be forthcoming, or the evidence in support of the claim was incomplete.

The condition is not now generally inserted in F. pol.

CICERO.—For supposed reference to Marine Ins. by, see MARINE INS., HIST. OF.

CINQUE PORTS.—The five ports of Hastings, Romney, Hythe, Dover, and Sandwich. They had orig. various privileges granted to them, as a particular jurisdiction; for instance, their warden had the authority of an admiral amongst them, and sent out writs in his own name. He was supreme admiral within his own jurisdiction, without appeal, as from other Admiralty Courts [see 5 Elizabeth c. 5, 1562]. The jurisdiction of the Cinque Ports was not to be affected by the 12 Anne, stat. 2, concerning Wreck and Salvage [see 4 Geo. I. c. 12 (1717), and 26 Geo. II. c. 19 (1753)]. Winchelsea and Rye were afterwards added, and made (regardless of the original signification of the name) Cinque Ports. By the 18 & 19 Vict. c. 48 (1855)—amended by 20 & 21 Vict. c. 1 (1857)—all jurisdiction and authority of the Lord Warden of the Cinque Ports and Constable of Dover Castle, in or in relation to the administration of justice, in actions, suits, or other proceedings in Law or in Equity, are abolished.

CIRCULATION (from *circulus*, a circle).—The flow of blood through the heart, the arteries, and the veins.

CIRCULATION, DEATHS FROM DISEASES OF THE ORGANS OF.—These rank as Order 2, of the Class of LOCAL DISEASES, and embrace Pericarditis, Aneurism, Heart-disease, etc., in all three enumerated forms, each of which is spoken of under its proper head. The deaths from this Order in England present very little variation, allowing for increase of pop. In 1858 they were 16,426; in 1862, 18,709; in 1867, 22,784. Over a period of fifteen years ending 1864 they averaged 824 to each million of the pop. living.

The deaths of 1867 were thus divided:—males, 11,210; females, 11,574. Of the males 50 died under 1 year, and 129 under 5; 176 between 5 and 10; 266 between 20 and 25; 1793 between 45 and 55; 2540 between 65 and 75; 1130 between 75 and 85; 115 between 85 and 95; and 2 over 95. Of the females 55 died under 1 year, and 132 under 5; 166 between 5 and 10; 328 between 20 and 25; 1735 between 45 and 55; 2738 between 65 and 75; 1199 between 75 and 85; 101 between 85 and 95; and 1 over 95.

CITE.—To refer to or quote an authority. It is generally used in a legal sense. In proceedings in the Ecclesiastical Courts, to "Cite" is to summon to appear.

CITIZEN ASSU. CORP., LIM.—This is the new name of the *Planet L.*, founded 1866. The change of name was resolved upon at the ann. general meeting of the Co. held 15th Aug. 1872. We shall give our hist. of the Co. under its orig. name. It had been proposed to call the Co. the *Defence Assu. Corp.*, but the above name was preferred.

CITIZEN LIFE.—This Co. was projected in 1854, but is not heard of afterwards.

CITY.—A town corporate is called a City when made the seat of a bishop, and having a cathedral church.—*Camden.* Cities were first incorporated A.D. 1079. The word has been only used in England since the Conquest, when London was called *Londonburgh.*—*Vincent.* In the U.S. very small places are called cities—apparently in view of their prob. future importance. A great deal has been said and written on the subject of the increased mort. arising from city life as contrasted with country or rural life. We shall deal with the whole question under TOWNS. [LONDON.]

CITY ACCIDENT INS. CO., LIMITED, founded in 1870, with an authorized cap. of £50,000, in shares of £1. This Co. was founded for the purpose of uniting the business of the *Accident Co.* (No. 1), with that of the *General Accident and Guarantee Co.*; and having successfully accomplished this, it, with the assent of the Board of Trade, changed its name to the *ACCIDENT Co.* (No. 2), where we have already spoken of it. This was the only means which could be devised for overcoming a purely technical difficulty, and the arrangement was carried out with the assent of the Registrar of Joint-Stock Cos.

CITY ASSURANCE CO., founded in 1862, with an authorized cap. of £100,000, in 10,000 shares of £10. The prosp. said:

The Co. is based upon the proprietary principle, with a provision in the D. of Sett. that when a given portion of the profits set aside to form a "Redemption Fund" shall equal the paid-up cap., the same shall be paid off with the fund as a bonus, the Co. then to become purely mut.—the entire profits being reserved for the members alone. By this arrangement all the *present* security of the proprietary cap. is obtained, whilst in the future, when the cap. shall have been returned, it will be afforded to an equal degree by the accumulated prem.

Pending such returns of cap., the profits were to be apportioned as follows:—one-sixth to shareholders; one-sixth to redemption fund; and the remaining two-thirds to the pol.-holders. Under "Invalid and Diseased Lives" we have the following:

In cases of invalid and diseased lives, where an extra prem. might reasonably be required, the ordinary rates *only* are charged; subject to the simple condition, that in the event of a claim occurring prior to the age to which, as a *first-class life*, the assured might have been expected to attain, such a deduction be made from the sum assured as shall be equal to the extra prem. remitted.

This was in point of fact Black's plan. [DISEASED LIVES, INS. OF.] Half-credit pol. were issued; 40 p.c. surrender value given after payment of 4 ann. prem.; "unconditional assurances" granted; "captains and mates of vessels can be ins. upon advantageous term;" "special advantages to the medical profession introducing assurers."

The founder of the Co. was Mr. William Howell Preston; its Sec. Mr. John H. Evens. In the first year of its existence it took over the bus. of *Public L.* In 1871 the Co. passed into voluntary liq., Mr. Fred. Hamilton being appointed Liquidator.

CITY AND COUNTY LIFE AND FIRE INS. CO., founded in 1863, with an authorized cap. of £500,000, in 25,000 shares of £20. Mr. Alfred Wm. Ray was the founder of the Co., and became its Man. An early advertisement said:

The *City and County Assu. Co.* has been estab. to meet an increasing public necessity for F. ins. cos. conducted under a less arbitrary system than that adopted by the present old-estab. cos. The directors pledge themselves to a fair and equitable adjustment of risk, without being guided by the arbitrary tariff rates of the old cos. It is intended to estab. offices in most of the large and important districts where influential connexions are formed for the Co. The operations of the Co. will also be extended to L. ins. . . .

Branches with local boards were estab. in Manchester and in Belfast.

The Art. of Asso. (clause 96) provided as follows:—"The sum of £2500, being 1 p.c. on the first issue of shares, shall be paid to the promoters of the Co. within 7 days from the date of allotment of shares, in consideration of their defraying all expenses whatever up to the time of such allotment, except brokerage on sale of shares. No free shares whatever are to be allotted." Clause 3 provided that "Alfred William Ray, Esq., should be Man. of the Co. at a salary commencing at £600 a year."

In the year it was founded it took over the bus. of the *World*, which had been founded in 1858 by Mr. Ray. The *City and County*, in add. to F. and L., carried on the bus. of accident ins. and of plate-glass ins. In 1864 the accident branch was trans. to the *Friend in Need*, and the plate-glass branch to the *London and General*.

In 1866 the remaining portions of the bus. of the Co. were trans. to the *Empire*; but out of that trans. arose some very important litigation, which we must briefly review.

The art. of asso. of the *City and County* contained a clause empowering the Directors, with the consent of an extraordinary general meeting, "to trans. and sell the bus. of the Co., or purchase or amalg. with the bus. of any other co. of a like nature." This Co. sold itself to the *Empire* (by agreement dated Oct. 1866), the business of which was to purchase the bus. of other assu. cos.; to carry on the bus. of F. and L. assu., and that of a loan co.; to guarantee fidelity; to advance money on houses, etc., and to purchase land. Afterwards the *Empire* Co., in which the *City and County* shareholders had taken shares in exchange for those in their orig. Co., came to be wound up, and some shareholders of the *City and County* were placed upon the list of contributories of the amalgamated cos. They objected, urging that the sale or amalg. was invalid, being *ultra vires*, the bus. not being of the like nature, and therefore that they were shareholders in the *City and County* Co. only, which was still in legal existence. And so the Court held, V. C. Wood remarking that "it was difficult to define exactly the meaning of the term 'amalgamation.' But," he said, "it was not sufficiently potent to compel a shareholder in one co. to enter upon all the liabilities of another co. totally different in its objects. It could not make a man a partner in a concern of the objects of which he was totally ignorant, and which he had never consented to join. If amalgamation was to be considered as meaning the power of transferring the whole bus. of one co. to another—in other words, the annihilation of the lesser co.—in which the shareholders in the one co. were to be compelled to participate in the liabilities of that co., however different their objects, it might be contended that a member of an ins. co. might be compelled, against his will, to become a member of a loan, guarantee, or any other speculative co." An order was made to rectify the regist. of the amalgamated co. by striking out the names of *City and County* shareholders who had continuously declined to sanction the amalg. or accept the new shares. This is now regarded as a leading case on this particular point. [AMALGAMATION.] Mr. Edwin H. Galsworthy is the Liq. of the *City and County*.

CITY OF GLASGOW ANNUITY AND ENDOWMENT SO., founded in Glasgow in 1840, for the purpose of granting annuities to widows. The asso. carried on bus. until about 1853 or 1854, when its affairs were wound up, by either trans. the annuities to some other co., or returning to the annuitants a surrender value. Mr. S. Pollock was the Sec. of the So.

CITY OF GLASGOW LIFE ASSU. CO.—Founded in Glasgow in 1838, with a cap. of £750,000, in 30,000 shares of £25. Cap. in 1842 limited to £600,000, in 24,000 shares of £25—£2 10s. paid. The orig. title of the Co. was *City of Glasgow L. Assu. and Rev. Co.*

The "Contract of Copartnery," under which the Co. was first constituted, dated 2nd January, 1839, sets forth as follows:

The persons after named and designated in the testing clause hereof, and hereto subscribing, each for himself or herself, and as taking burden for the person or persons for whom they respectively subs. as mandatories, considering that a L. assu. co. upon a broad and liberal basis, comprising merchants, landowners, agriculturists, capitalists, and others, in different parts of the country, would be highly useful and advantageous, Have resolved, and do now resolve, to unite and associate themselves into a so. or co. for the purposes after mentioned; and in order to secure the proper management and constitution of the affairs thereof, have agreed to adopt the following rules and regulations, as the principles on which the same shall be estab. and carried on. It is therefore conditioned and agreed between the parties as follows:

1. That the Co. hereby formed shall be known by the name and designation of the City of Glasgow L. Assu. and Rev. Co.; and notwithstanding the dates of the several subs. hereto, shall be held as having commenced upon the 23rd day of Oct., 1838, which day is hereby declared to be and to have been the time of the commencement of this copartnery; and the said Co. shall continue and endure until dissolved and put an end to in terms of the provision hereinafter expressed, notwithstanding the death, bankruptcy, or retirement of any of the partners; and during the subsistence of the copartnery the said parties faithfully promise and oblige themselves severally to promote and advance the interests of this Co. to the utmost of their power and ability.

The 2nd clause states the object and bus. of the Co. The 3rd relates to the cap., of which the directors might retain unallotted any number of shares they pleased, afterwards allotting them not below par, and any premium received thereon to be carried to credit of proprietors' account. The 4th clause provided that partners within one year after their admission were to "effect and keep on foot one or more assu. or assurances with the Co., either on his or her own life, or on the life or lives of one or more approved nominee or nominees, to an amount of not less than £10 sterling for every 4 shares of the stock subs. by each when 40 or more shares are held, and to the extent of £100 stg. when the partner holds fewer than 40 shares, or shall procure one or more approved substitutes," who should effect such ins., "or that every orig. and future partner of the Co. shall transact such other bus. with the Co. as shall in the opinion of the ordinary directors produce an equal amount of profit to what would have been derived by the said Co. had an assurance been effected as above specified." In default to pay a penalty of such an amount as should be likely to enforce observance. Partners should have right of profits and be liable for losses in proportion to shares held (c. 8). Partners may sell their shares, after offering them to the Co., directors to have 8 days to accept or decline purchase (c. 9). Partners becoming bankrupt to cease to be partners (c. 11). Assigner and assignee both liable for calls (c. 14). Partners disposing of their shares according to the regulations of the Co. to be relieved of all subsequent obligations (c. 17). Partners holding less than 10 shares to have no vote, then sliding scale—10 shares 1 vote, 300 shares 10 votes (c. 20).

Directors to have power to appoint a governor, deputy-governor, and extraordinary directors : qualification of ordinary directors 100 shares : annual remuneration of entire board not to exceed £500 (c. 22). Three directors to go out annually (c. 23). Directors to supply interim vacancies (c. 24). Directors to appoint manager and other officers (c. 26).

Regarding the sale of shares offered under power already named, when the shares offered are 20 or more in number, notice to be given in the Glasgow newspapers for at least 3 weeks of intended sale. "The directors to fix the time and place, when and where the roup or sale shall be made, to regulate the prices at which the shares shall be set up, and to lower the same if they shall think proper ; to adjourn the sale from time to time ; to receive and discharge the prices ; and to assign and convey the shares to the purchaser," etc. (c. 29). The directors may purchase shares for behoof of Co. (c. 30).

The following funds were to be opened and kept—"The Proprietors' Account," "The Assurance Account," "The Annuity Account," "The Endowment Account," "The Reversionary Account," and "The Accumulation Account." The books to be balanced yearly, and a state of the Co.'s affairs and valuation of the shares to be laid before the ann. gen. meeting. The gen. meeting may appoint a private committee to report upon state of affairs (c. 32). During the first year no dividend was to be paid ; but the interest and profit, "after defraying the expenses attending the first year, to be retained to answer contingencies." Then :

It is hereby provided and declared, that it shall be in the power of the ordinary directors to make such regulations as they may think fit for the purpose of allowing persons who shall effect pol. to parti. in the profits arising from the class of bus. in which they may be respectively concerned, and that to such extent, and upon such terms and conditions, as the ordinary directors may from time to time think proper for encouraging the bus. of this Co. (sec. 33).

[It had in the first instance been intended that the Co. should be strictly proprietary ; but this idea was abandoned.]

All disputes to be settled by arbitration (c. 35). Provisions as to mode in which Co. may be wound up (c. 37, 38). Then a nice little piece of Scotch law, viz. :

39. That the parties hereto, and their heirs and successors, shall be bound and obliged to fulfil, perform, and observe their respective parts of the present contract, and to abide by and implement the other regulations and bye-laws of the Co. in force for the time, in the whole clauses and articles thereof, with good faith, and according to the true intent and meaning of the same, and that under the penalty of £10 sterling for each share holden by them for the time, to be paid by each of the partners failing to the manager for the Co.'s behoof, over and above performance ; and each of the parties hereby assigns to the Co. and to the ordinary directors for the time being, his whole shares of the capital stock, and of the profits thereon accruing, in further security of his punctual performance and observance of the premises, and for enabling the ordinary directors, if at any time necessary, under the provisions before written, to sell and dispose thereof, in manner above directed.

Again :

And further in regard that by reason of the length of this deed, and the great number of subscriptions to be adhibited hereto, it is impossible to procure one sheet of paper or vellum large enough to contain the whole of this contract, together with the said subs. hereto, it therefore becomes necessary that various sheets shall be joined together ; and in regard it is equally impossible to leave sufficient room for all the parties to subs. the joinings of the said several sheets upon which these presents are engrossed, it is therefore agreed by the whole partners contracting, and hereto subscribing, that . . . two of their number shall be authorized, and they are hereby authorized accordingly, to sign the joinings of said sheets, and of those on which the testing clause and the subs. may yet be written, upon the margin, which it is hereby declared shall be of equal validity and sufficient as if the same had been signed by all and such of the parties hereunto, any law or practice to the contrary notwithstanding (c. 41).

And Lastly.—The whole parties subs. consent to the registration hereof, and of the several mandates alluded to in the course hereof, in the Books of Council and Session, or others competent, therein to remain for preservation, and, if necessary, that all execution pass against them and their means and estate, and against the means and estates of the cos. who are parties hereto, and that on a charge of six days in common form ; and for that purpose they constitute . . . their procurators. In witness whereof, etc., etc.

It will be seen that some of the preceding provisions are modified by the special Acts about to be noticed.

An early prosp. announced a "special feature," viz.—"This principle is that if a party has contributed to the profits by payment of a larger prem. than is found eventually to have been required, he shall receive his proper share of the profits thence arising, at the earliest possible period after it has been ascertained that he has made an over-payment." We believe no necessity now exists for such special mode of treatment.

In 1842 the Co. obtained a special Act of Parl.—5 Vict. (session 2) c. lxx.—*An Act to enable the City of Glasgow Life Assu. and Rev. Co. to sue and be sued ; and for other purposes relating to the said Co.* The Act received the Royal Assent 18th June, 1842. It recites the preceding D. of Copartnery, and provides that the Co. may sue and be sued in the name of the Man. In case of any action being brought against any shareholder, notice was also to be given to the Co. (sec. iv). Individual shareholders to be reimbursed by contributions from other shareholders. The property of the Co. was vested in trustees. Cap. restricted to £600,000. The fines on shareholders for not insuring were dispensed with. The three directors going out of office ann. were not to be eligible for re-election for at least one year. The Act was not to have the effect of incorporating Co., nor of exempting it from the provisions of any general Act relating to ins. asso. At this date Mr. W. Dalglish was Man. of the Co. ; Mr. Archibald Borthwick, Act.

In 1845 the Co. commenced bus. in Lond. ; in 1847 it took over the bus. of the *Mutual Accumulation*, which was very small—25 endowments only.

In 1861 the Co. obtained a special Act of Incorp., viz. 24 & 25 Vict. c. cxlv.—*An Act to Incorp. the City of Glasgow Assu. Co., and for other Purposes*. The Act recites the D. of Copartnery, and the previous Act, which latter it repealed. Sec. 4 declares the Co. and the present and all succeeding shareholders therein :

United and incorp. into one body politic and corporate by the name of the *City of Glasgow L. Assu. Co.*; and by that name shall have perpetual succession, with a common seal, with power to change or renew the same from time to time; and shall be entitled to purchase, hold, or convey lands, and to carry on their bus. in all its branches, with and under the conditions and provisions and powers and privileges hereinafter specified; and the Co. shall continue so incorp. until dissolved and the affairs thereof wound up, as provided by the contract of copartnery before recited.

But the liability of shareholders was to continue the same as if the Co. was not incorp. (sec. 5); ins. by shareholders dispensed with (sec. 18); ann. gen. meeting to be held last Tuesday in April (sec. 23); shareholders and pol.-holders may sue and be sued (sec. 42); Co. subject to Superior Courts in England and Ireland (sec. 43); a provision in sec. 48 is special and exceptional :

... And where any sum of money shall be payable by the Co. under any pol. or obligation, or otherwise, to the heirs, executors, administrators, or assigns of any person deceased, the title of such heirs, executors, or administrators shall be sufficiently estab. by production of any probate of the will of the deceased, or letters of administration of his estate, whether obtained in *England, Ireland, in the East Indies, or Her Majesty's Colonies or Dependencies* abroad, or by production of any testamentary, or testament dative or confirmation expedite in *Scotland*, and that, in whatever country such pol. may have been issued, or such sums be paid, or the party so dying may have been domiciled.

The Co. is not bound to regard trusts (sec. 49); disputes to be settled by arbitration (sec. 50); contract of copartnery and bye-laws to remain valid (sec. 51); Co. not exempt from prov. of any future Act affecting ins. asso. (sec. 52). In the schedule are a number of forms to be used by the Co.

Mr. Walkinshaw succeeded Mr. Dalglish in the man., and held that position down to 1863.

The man. of the Co. is, and always has been, sound and successful. The profits are ascertained and divided every five years. The bonus is allocated upon the sum ins., and all existing bonuses previously declared. An intermediate bonus is declared upon pol. of five years' standing and upwards. Bonus add. on pol. of 20 years' standing may "be applied to make the sum in the pol. payable during the lifetime of the assu., if he attains an age which will be fixed by the amount of rev. benefits surrendered." In the matter of foreign travel and residence, the features are remarkably liberal. [FOREIGN TRAVEL AND RESIDENCE.] All pol. indisputable after five years' duration, and satisfactory proof of age furnished. Fixed minimum surrender values given after three ann. prems. paid; or "free pol." given for equivalent amount.

The ann. revenue of the Co. is upwards of £160,000; the existing ins. in force, 1872, amounted to £4,201,836. The life fund (exclusive of £60,000 paid-up cap.) amounted to £586,930.

The Man. and Act. of the Co. is Mr. Andrew H. Turnbull; the Sec. Mr. George Gray. The Lond. Sec. Mr. F. F. Elderton. The Co. is in every respect first class.

CITY OF LONDON ANNUITY AND LOAN CO., founded in 1839, with an authorized cap. of £500,000, which was announced to be "fully subs." The orig. prosp. said :

The objects of this inst. are to grant adequate rates of annu. to parties disposed to invest their surplus cap. in this manner, and to offer to others the means of obtaining a provision at an advanced age, on fair and reasonable terms. In the one case the Co. affords to persons unconnected with, or retiring from trade, one of the best possible modes of securing a competency for the remainder of life; and in the other case it presents to the public a new system of assu., of which the benefit, in each case, is not to be enjoyed by others, after the death of the subscriber, but by the subscriber himself, at that period of life when it is evident that it will be most serviceable, even if it do not become necessary.

It was stated, "The *rates* of this Co. have been deduced from the most correct modern obs. of the decrements of human life (both male and female), combined with the most exact and extensive experience in the fluctuations of the rate of int." It was further stated, "The funds of this inst. are invested in loans on well-secured life interests and reversions." The following "comparative T. exhibiting the rates allowed by the Co. for each £100 sunk, and comparing them with those allowed by Gov. and when the price of 3 p. c. consols is 90":—

Age.	MALE.			FEMALE.		
	City of Lond. rate.	Gov. rate.	Excess beyond Gov. rate.	City of Lond. rate.	Gov. rate.	Excess beyond Gov. rate.
30	£7 6 1	£5 9 1	£1 17 0	£7 1 0	£5 1 8	£1 19 4
40	7 17 4	6 1 10	1 15 6	7 10 7	5 11 7	1 19 0
50	8 19 2	7 7 5	1 11 9	8 9 3	6 8 9	2 0 6
55	9 16 7	8 6 8	1 9 11	9 7 4	7 3 4	2 0 10
60	11 0 8	9 10 0	1 10 8	10 4 10	8 3 7	2 1 3
65	12 14 3	11 5 5	1 8 10	11 13 5	9 13 2	2 0 3
70	15 2 4	13 13 6	1 8 10	13 13 11	11 15 10	1 8 1
75	18 13 1	17 1 11	1 11 2	16 12 9	14 15 7	1 17 2

Mr. Naylor was the founder of this Co., but it had not been in operation many months, when, on the formation of the *Church of England L. and F. office* in 1840, it was pro-

posed that its bus. should be absorbed into this new Co., and the arrangement was carried out, as already set forth in our hist. of that Co.

CITY OF LONDON FIRE.—A co. under this title was projected in 1861, soon after the great fire in Tooley St., and when considerable excitement prevailed in the City regarding the prem. for mercantile risks, which had been suddenly and largely increased in consequence of that calamity. Mr. Stephen Sleigh was the promoter of the Co., apparently under the patronage of Mr. Wm. Henry Peek, the well-known tea and coffee merchant. This project afterwards merged into the *Commercial Union*, which was set on foot a few days later.

CITY OF LONDON AND GENERAL FIRE AND LIFE INS. CO., LIM., projected in 1863, with a cap. of £1,000,000, in 20,000 shares of £50. Mr. A. H. Gunn was the promoter of the Co., which was dissolved almost before it was created, under the following circumstances. The shares of the Co., when the project was first put on the market, were "beared" considerably. The promoters, by way of retaliation, took steps to improve the market. A reaction set in, and the shares came to be quoted at a considerable prem. The applications immediately became very numerous, reaching in the aggregate 23,182, against which, however, the directors only allotted 13,652. By this means many of those who had sold the shares on a speculative account got none allotted, and had to go into the market to purchase shares for delivery. This caused the price still further to advance, until at length the prem. reached £5 on shares having £1 paid by way of deposit, or in other words, the shares reached 500 p.c. prem. A Mr. Jamieson, of Aberdeen, had been called in to work the market into this form, and he became somewhat rapacious in his demands upon the promoters. They did not comply, and he took some action by applying for a summons against the promoters, which however he did not obtain. But enough transpired to give the "bears" a hope of escaping from the dilemma in which they found themselves. They initiated criminal proceedings against the directors and promoters. The directors backed out, and left the fighting with the promoters. Mr. Gunn made a vigorous resistance. He pub. a "Statement," in which there occurs this passage:

Speculation had taken place to a large extent in our shares. Our stock was rising, and on some of the operators who had contracted to sell and deliver the fulfilment of their engagement on the settling day would have inflicted severe, perhaps ruinous, loss. It became a matter of life or death, of bankruptcy or solvency, with some of them, whether the settlement could or could not be deferred. It was their interest to put it off—to put it off if they could for ever. There were others rowing in the same boat whom it might not ruin, but unpleasantly mulct—men of influence and accredited for wealth—men of financial and official position in the City.

There is no doubt this is a true picture. The large attendance of City magistrates at the hearing, and the commotion among them, led careful observers to remark that they did not seem to be all there for the purposes of justice. In the end it was announced that the Co. would be dissolved, and that consequently there would be no allotment of shares. This appeared exactly to suit the views of the more clamorous, and so the embryo co. disappeared from the scene.

CITY OF LONDON LIFE ASSU. SO., founded in 1845, with an authorized cap. of £250,000, in 5000 shares of £50, "for general assu. on lives and survivorships, the purchase and grant of annu., the purchase of life interests and reversions, endow. for widows and children, loans and accumulative and self-protecting assu." The greater portion of the cap. was subs. The orig. prosp. said:

The *City of Lond. L. Assu. So.* has been estab. for the purpose of uniting all the advantages presented by other L. assu. offices, with certain plans of a peculiar nature, of mut. interest to the assurer and the assured; and, with a view of affording facilities in every department of bus., upon principles of true economy, limited only by a strict regard to security. . . . Among the peculiarities of the system adopted by this office are: 1st. A computation of prem. founded not upon local, imperfect, or theoretical data, but upon the actual experience of a considerable majority of the most important offices in existence; and a graduation of charges for management, etc., equitably adjusted to every age. . . . 4th. A new and valuable extension of the principle of L. assu., by which deposits are made either suitable for an assu., or may be reclaimed at any period.

Among the privileges enjoyed by the assured are: 1. A full proportion of the profits of the office, by the mutually assured; and a parti. with the proprietors generally in their control over the management. 2. A commutation of the prospective benefits of the mut. branch, effected by a proportionate reduction of the rates in the proprietary scale of prem. . . .

General Features.—After a proportionate contribution towards the int. upon the subs. cap. and the general charges of the estab., the whole of the profits arising from the mut. assu. will be triennially divided, after the first 3 years, among the assu. in that department. All other profits to be added in completion of subs. cap. Foreign lives assu. and annu. granted to foreigners under special contracts. . . .

There was to be a fund, "under suitable regulations, raised in accordance with a distinct set of T., for the benefit of the widows and children of naval and military officers, and of clerks in government and municipal offices." A later prosp. announced "self-protecting assurance" and "indisputable pol."

In the first instance, Mr. Rainbow was Consulting Act.; afterwards Mr. G. J. Farrance. Mr. Edward Frederick Leeks was Sec. of the Co. The bus. of the Co. was very limited in its early years. It reported one death from cholera in 1849, ins. for £1000. At the end of 1851 the total insurances on the books amounted to £265,827, yielding in prem. £9235. In 1852 a bonus was declared equivalent to 20 p.c. cash on the prem. paid on pol. of 5 years' standing. The total pol. issued up to that date were 1041, ins. £383,578.

In 1851 the Co. took over the bus. of the *Peoples L.*; in 1853 the bus. of the *County Mutual*; in 1856 the bus. of the *Deposit and General*, and also the bus. of the *Protestant L.* In 1857 the bus. of the *Absolute*, and also that of the *Observer*. In 1858 it took over the bus. of the *Achilles*. In 1859 its entire bus. was trans. to the *Eagle*. It was most fortunate for the pol.-holders of these united offices to find themselves ultimately enjoying the advantages of such a solid and advantageous asso. This was one of the first of the modern offices which commenced to acquire the bus. of other cos. by amalg. or purchase.

CITY OF LONDON LOAN, ANNUITY, AND GENERAL INS. CO.—A Co. under this title was projected in 1845—the same year that the *City of Lond. Life* was founded. We presume that it was the rival counterpart, which nearly always appears, and is generally the result of either of a split between promoters or of a traitor in the camp. Sometimes promoters themselves regis. a similar name under which they intend to trade, with a view of securing a complete monopoly in the title of their enterprise.

CITY OF MANCHESTER INVESTMENT CO. was projected in Manchester in 1855, for granting loans in connexion with life ins. It never reached the stage of having any money to lend; and—being unable to borrow any—fell through!

CITY AND PROVINCIAL INS. CO.—A project under this title was regis. in 1861. We believe it had been previously regis. as the *Britannia F.* The promoter was Mr. Alfred T. Jay. It did not go forward.

CIVIL stands for the opposite of anything military, political, ecclesiastical, or criminal.

CIVIL COMMOTION.—An insurrection or tumultuous rising of the people for the purposes of specific or general mischief, but falling short of rebellion to overthrow the government.

It is a usual condition in F. pols.—and a prudent and necessary one—that the office shall not be liable for loss occasioned by Civil Commotion, riots, etc. Owners of property, however, are not left without a remedy in such cases; this remedy is against the *Hundred* in which the outbreak shall arise. The liability of the Hundred for damage done to property is very ancient, and may be traced back to the time when every community was responsible for the acts of its members. It was bound to maintain its own peace; and if it failed to do so, it was punished for its default by being compelled to compensate the damage done by those whom it could not, or would not, put down.

The early riot acts embodied legislation upon this subject—especially that of 1714—the 1 Geo. I. stat. 2, c. 5. There has, however, been some modern legislation upon the subject, and there are also several important cases in the law-books.

In 1726 the *Sun F.* office introduced into its conditions of fire ins. the following words: “No loss or damage to be paid on fire happening by any invasion, foreign enemy, *Civil Commotion*, or any military or usurped power whatever.” Several other offices had a similar clause, with the exception of the words “Civil Commotion.”

In 1780 Gordon’s [Lord George Gordon] “No Popery” riots occurred in Lond., and a considerable destruction of property took place. In reference to the property so destroyed several actions came before the Courts, which we shall have to notice.

In the case of *Langdale v. Mason and others* [Managers of the *Sun F.* office], that Co. was in the same year (1780) sued under one of its pol. for payment of the sum ins. on a house and premises burned by the rioters. The Co. pleaded its condition above given; and after an able summing up by Lord Mansfield, the jury found for the defendants on the ground of the exemption in their pol.

In the case of *Mason v. Sainsbury*, which came before the King’s Bench in 1782, the facts were as follows. It was an action under the Riot Act (1 Geo. I. c. 5, s. 6), to recover damages sustained by the demolition of a house in the riots of 1780. There was a verdict for the plaintiff, with £259 damages, subject to the opinion of the Court on a case, which stated that the plaintiff had ins. the house in the *Hand-in-Hand* Fire Office, which had paid the loss; and that this action was brought against the Hundred in the plaintiff’s name, and with his consent, for the benefit and indemnity of the ins. office. When the case was first heard, it was contended, for the plaintiff, that there were a variety of cases like the present in which an action might be maintained in the name of the person originally interested. On its rehearing upon the points reserved, the question mainly turned upon the one point, viz. whether, as the plaintiff had already received a satisfaction, this action could be maintained against the Hundred on behalf of the insurers. The Court was unanimously of opinion that such a right existed.

In the case of *Lond. Assu. Corp. v. Sainsbury*, heard in 1783, the facts were as follow: The ins. office, having paid the insured the amount of the loss sustained by him in consequence of a demolishing by rioters, sued the hundreders in their own names. *Held*, by Lord Mansfield and Mr. Justice Buller (Justices Willes and Ashurst dissenting), that the ins. office was not entitled to recover. This objection appears to be only one of form. The insured had gone against the county for his entire losses, which were much beyond the sum insured; he had recovered (*Langdale v. Kennett*, 1781), except that the jury deducted from the total loss the sum received from the ins., and thus left the ins. co. without remedy, as a second action could not be maintained.

We presume after these decisions all the F. offices introduced the words “Civil Commotions” into their exemptions from liability. We shall revert to this subject under **FIRE INS., CONDITIONS OF.**

In the case of *Clark v. the Inhabitants of the Hundred of Blything*, before the Courts in 1823, the facts were as follow: The owner of certain stacks of hay and corn, which were maliciously set on fire, had received the amount of his loss from an ins. office. But it was *Held*, by the Court, that he might nevertheless maintain an action in his own name against the Hundred under the 9 Geo. I. c. 22.

This last-named case is important as showing that in cases of *incendiary fires* the ins. office may fall back upon the Hundred for indemnity. [INCENDIARY FIRES.]

In 1827 the law upon the subject was again brought under statutory regulations by 7 & 8 Geo. IV. c. 31, wherein the liability of the Hundred is now defined, and the proceedings regulated. Sec. 2 enacts that if any church, etc., or any house, stable, etc., or any building or erection used in carrying on any trade or manufacture, etc., shall be *feloniously demolished, pulled down, or destroyed, wholly or in part, by any persons riotously and tumultuously assembled together*, in every such case the inhabitants of the hundred, wapentake, ward or other district in the nature of a hundred, by whatever name it shall be denominated, in which any of the said offences shall be committed, shall be liable to yield full compensation to the person or persons damnified by the offence, not only for the damage so done to any of the subjects hereinbefore enumerated, but also for any damage which may at the same time be done by any such offenders to any fixture, or furniture, or goods whatsoever, in any church, etc., or house, etc., or other buildings or erections aforesaid.

In order to obtain the benefits of this statute, the injured party must, within *seven days* from the commission of the offence, go before a Justice of the Peace having jurisdiction over the place where the offence was committed, and state upon oath the names of the offenders, if known, and submit to the examination of such Justice touching the circumstances of the offence, and become bound in recognizances to prosecute the offenders when apprehended. And every such action must be commenced within *three months* after the commission of the offence. Where less than £30 is claimed, the Justice may hear and determine the same.

Process against the Hundred is to be served on the High Constable. If the plaintiff recovers, the Sheriff, on receipt of the writ of execution, is to make out a warrant directing the Treasurer of the County to pay the amount.

It has been held that it shall be sufficient to constitute a riotous and tumultuous assembly if any one of His Majesty's subjects was terrified; and it has been held that the beginning to demolish a house, etc., within the statute must be such as to satisfy the jury that the ultimate object of the rioters was to demolish the whole of it.—*Rex v. Ashton*.

The latest enactment upon the subject appears to have been in 1861—the 24 & 25 Vict. c. 97; but it does not appear to vary from that of 1827. The Fenian outrages of 1867 and 1868 drew attention to the law upon this subject, but no fresh enactments took place.

Plate-glass ins. cos., cattle ins. cos., and carriage ins. cos. should introduce into their pol. conditions protecting them from the consequences of destruction and injury by reason of Civil Commotion, naval or military operations, foreign invasion, usurped power, etc.

In all those cases where the insured have a primary right against third parties who have been the authors of the injury, either through negligence or more culpable misconduct, not amounting to felony, the insurers, on making good the loss, are entitled to enforce the remedy of the assured, and in their name to recoup themselves for their expenditure. The contract of ins. is treated as an indemnity, and the insurer as a surety, who is entitled to all the remedies and securities of the assured, and to stand in his place. If the insurers were first liable, payment by them would be a satisfaction, and relieve the wrong-doer; but this is not so, for the latter is first liable. The assured have indeed a double remedy: if they pursue that against the wrong-doer, and recover compensation, the insurers escape; but if they choose to enforce the claim against the insurers in the first instance, the latter are entitled to use the name of the assured in an action to recover the money which they have paid.—*Bunyon, Law of Fire Ins.*

CIVIL LAW.—That rule of action which every particular nation, commonwealth or city has estab. peculiarly for itself—more properly distinguished by the name of Municipal Law. The term "Civil Law" is now more generally applied to that which the Romans compiled from the law of nature and nations, and which, correctly speaking, should be called the "Roman Civil Law."

Most, if not all, the Maritime Codes now existing were founded more or less upon the Roman Civil Law. "There being (says Sir Robert Wiseman, in his *Law of Laws*) a necessity of another law, besides the particular law of each country, the Civil Law has been chosen by most foreign States; because it has from the time of the Romans run through all nations, and has been so generally applauded, and allowed of by all, that now at last it has purchased to itself the honour to be styled *Jus Gentium*, the law of nations, or *Jus Commune*, the common law of all Europe, because it hath more in it of the law of nature than any other law of man."

Owing to this common base, there is a harmony in the law of nations which has tended greatly to facilitate commerce, and with commerce maritime ins.

CIVIL SERVICE MINERS AND GENERAL LIFE ASSU. CO., founded in 1854, and commenced bus. apparently in connexion with the Ancient Order of Foresters Freehold Land So. ; but almost before the asso. had commenced operations, its effects were disposed of by the hammer of the then well-known Mr. Furber—an auctioneer, too frequently engaged in selling off the effects of unsuccessful ins. asso. The execution creditor was the upholsterer who had supplied the office furniture.

CIVILIZED LIFE.—It has been the subject of much discussion how far the refinements of Civilized Life tend either to the multiplication of the human race, its happiness, or its longevity. We do not intend to enter upon the discussion of these questions here, but content ourselves with the following sensible passage from Dr. Price's *Observations*, etc. :

One of the most obvious divisions of the state of mankind is into the *wild* and the *civilized* state. In the former man is a creature, rude, ignorant, and savage, running about the woods, and living by hunting, or on the spontaneous productions of the earth. In this state the means of subsistence being scarce, and a large quantity of ground necessary to support a few, there can never be any considerable increase. In the latter state, man is a creature fixed on one spot, employing himself in cultivating the ground, and enjoying the advantages of science, arts, and civil government. Of this last state there are many different degrees or stages, from the most simple to the most refined and luxurious. The first or the simple stages of civilization are those which favour most the increase and the happiness of mankind. For in these states agriculture supplies plenty of the means of subsistence; the blessings of a natural or simple life are enjoyed; property is equally divided; the wants of men are few, and soon satisfied; and families are easily provided for. On the contrary, in the refined states of civilization property is engrossed, and the natural equality of men subverted; artificial necessities without number are created; great towns propagate contagion and licentiousness; luxury and vice prevail; and together with them disease, poverty, venality, and oppression. And there is a limit at which, when the corruptions of civil society arrive, all liberty, virtue, and happiness must be lost, and complete ruin follow.

Those who understand Dr. Price's peculiar views of the degrading tendencies of cities will understand the dark shades of the preceding picture. We shall have to revert to the subject under **TOWNS, LIFE IN.**

CLABON, C. B., Sec. of *Law Rev. Int. So.* since 1856.

CLAIM [from the Latin *clamo*, to cry out].—To ask as a right; to demand as due; to request authoritatively; to require; to become entitled to a thing; to derive a right. —*Worcester.*

In Ins. the making a "Claim" is technically understood as an intimation that the event or contingency insured against has occurred; or where several events or contingencies are insured against, that at least one of them has occurred. It forms a necessary condition of every ins. pol. that any claim made under it shall be verified by some proof of the occurrence which gives rise to the claim. Some pol. state the exact nature of the proof to be furnished. Others only intimate that "reasonable proof" will be required.

There are several stages through which every claim must pass, varying more or less with the nature of the bus. We proceed to enumerate these :

1. NOTICE OF CLAIM—that is notice by claimant to the insurer (underwriter, or asso.).
2. PROOF OF CLAIM—that is proof to be furnished by the insured to insurer.
3. ADMISSION OF CLAIM—that is admission by the insurer that the insured has substantiated his claim.
4. PAYMENT OF CLAIM—the actual handing over of the cash and the receipt of the proper discharges to the insurer.
5. RESISTANCE OF CLAIM—that is either by letting the claimant take his course at law, or by the insurer giving notice of arbitration.

We shall treat of the subject as briefly and as clearly as possible under each of these heads.

(1). *Notice of Claim.*—It may be regarded as of the essence of the contract of ins. that timely notice—that is to say, *that the earliest possible notice*—be given to the insurer of any casualty having happened by which it is supposed a claim has arisen. Many pol. name a specific time within which notice *must be sent*, or failing such notice any benefit otherwise accruing is forfeited. Others simply say "forthwith" or "immediately"; but the intention is in all cases the same, viz. that the insurer shall have early notice, in order that he may enter into or upon such inquiry as he deems important to his interests.

In the case of *Fire* loss, the necessity for early notice, in view of salvage, etc., appears obvious. In *Cattle* ins., in *Glass* ins., in *Hail* ins., it is equally obvious. In *Fidelity* ins. time is frequently of the utmost consequence. But in the case of *Life* ins., and yet more of *Accident* ins., the injury resulting to the office from delay can hardly be atoned for. If the *cause of death* requires to be investigated through the aid of a coroner's inquest, that must take place before burial; and where a *post-mortem* becomes necessary, that also must be made before burial, the alternative being the unpleasant one of an application to the Sec. of State for power to exhume. Regarding *Accident* ins. more particularly, we have already shown, under **CAUSE OF DEATH**, some of the reasons which necessitate prompt notice. Even in non-fatal injuries the necessity of prompt medical advice, or special treatment, themselves suggest the injurious consequences which may arise from delay.

In the case of *Marine* ins. the distance at which the casualty frequently happens interposes difficulties. Yet the necessity for prompt notice to the underwriter is as great as in most of the other classes of ins., and in some respects even more so, as great injustice

obtains a proper "discharge" for money paid under a pol. The mere possession of a pol. is no evidence of ownership. Even under "nomination pol." evidence of identity is at least required. In cases of assignment the production of the pol., with the deed of assignment, or a duplicate of it, is usual. In the ordinary case of a life pol., or of a fatal claim under an accident pol., the probate of the will containing any direction as to the pol., or letters of administration, are lodged with the asso. for examination between admission of claim and time of payment. [ASSIGNMENT OF INS. POL.] [BANKRUPTCY.] [MARRIED WOMEN'S PROPERTY ACT.]

(5). *Resistance of Claims.*—There was at one time existing a foolish sentiment regarding what is called the "disputing of claims" by the managers and directors of ins. offices. It is happily passing away. Ins. is a matter of contract, that contract being based upon good faith. If the underwriters or co. find that good faith has not been observed, it becomes a duty to resist. In *Marine* ins. fraud is of very frequent occurrence; but it is often very difficult of proof. In *Fire* ins. the proportion of claims more or less fraudulent is considerable. In *Accident* ins. and in *Cattle* ins. attempts at fraud in a small way are far too prevalent. The ordinary course of resistance is simply refusing to pay, leaving the insured to his legal remedy. It is doubtful whether this is always a wise course. Most pol. contain an "arbitration clause." Where the question is only one of amount, the underwriters or co. should take the initiative, and give "notice of reference." Where the claim is purely fictitious, or fraudulent in its inception, the initiative should be taken by the insurer, who is too often placed at a disadvantage by allowing the insured to commence a civil process, where a criminal one would most apply.

In addition to the preceding, which embody the main points of practice, from the office point of view, there are some other considerations to be regarded in dealing with claims. A knowledge of the legal decisions in previous cases of a like character is of the first importance; while business aptitude, discernment, and diplomacy are very frequently called into play, alike on the part of the "claim adjuster" and the managers of the office. We shall deal with a few of these considerations under alphabetical arrangement.

Accident Ins.—At the close of our HIST. OF ACCIDENT INS. we have noted a few of the more important points which have been determined in cases which have come before the Courts. We need not repeat them here. It is in the common interest of accident cos. to uphold those decisions. It is an important feature in accident ins. that the death must take place within a given period (usually three months) after the injury. It is a point of the first importance that the co. provide its own *forms* for the insertion of details of non-fatal as well as fatal injuries; and that the co. insist upon these being actually filled up and returned before any claim be admitted. It is no hardship on a person subsisting on the funds of the co. to make full and proper returns whenever required. Any attempt at evasion must be regarded with great suspicion. Twenty years' experience of this bus. has shown the writer that *whenever there is any irregularity about the notice of injury or death reaching the office, there is also some irregularity about the claim itself.*

Where the claimants are entitled to compensation for non-fatal injuries, the difficulty of obtaining completely satisfactory evidence is sometimes very great. Claimants and agents alike fall into the notion that a "liberal mode of settlement," without any very strict regard to the actual facts, is best for the office. Experience, however, speaks differently. An able writer upon ins. topics in the U.S. says hereon:

A strict construction of the terms of the contract, regardless of the character or influence of claimants, treating the rich and poor alike, will estab. confidence in the integrity and good faith of our settlements; while the man of position and influence will justly despise any co. which should seek to buy his influence by the payment of an excessive and unjust claim, when at the same time he sees a claim equally valid as his own denied to his poorer neighbour.

These remarks also apply to *Health* Ins.

Fire Ins.—Under APPORTIONMENT OF FIRE LOSSES we have already stated some of the general considerations which arise in relation to claims under F. pol.; while under AVERAGE POL. (*Fire*), we have noted many of the more technical points involved. Under CERTIFICATE OF LOSS we have spoken of a specific requirement under some F. pol. We now have to add a few more important details.

In the case of claims under "average pol.," the following special forms are required to form part of the "proof":

A., B., and Co., the undersigned, do hereby declare that the following is a full, true, and faithful statement of the whole of the goods, wares, and merchandize, and the value thereof, on the day of the fire, which was held by us, either on our own account, or on trust, or on commission, which are or were lying or being within the places and limits specified in our pol., No. . . . , of the . . . Ins. Co., on the day of the late fire in . . . wharf.

And we further declare that the following is a full, true, and faithful statement of all the ins. effected by or for us with other F. offices, upon such goods, wares, and merchandize; and that we have in this statement distinguished the specific insurances, or those that may vary from pol. No. . . . before mentioned, under which our claim is made.

And we do also declare, that we have not omitted from this statement any goods, wares, merchandize, or effects upon which we had at the time of the said fire any lien, claim, or title, upon which we could have made a claim for loss by fire, had such goods, wares, merchandize, or effects been destroyed by fire.

Then come the schedules to be filled up with the following all-important information: 1st. Particulars of the whole of the goods, wares, or merchandize at the time of the said fire, including those damaged or destroyed. 2nd. Particulars of goods, wares, or mer-

chandise destroyed or damaged by said fire. 3rd. Particulars of pol. of ins. with other offices, with their respective amounts and numbers. 4th. Claim to be made in the following form :

Claim under pol. No. . . . , subject to average. We do hereby declare and set forth, that at the fire, on the . . . , 187 . . . , the following articles, goods, wares, or merchandize, being our property or the property of other persons to whom we are legally liable, and ins. by your pol. No. . . . , were destroyed or damaged by the said fire according to the values at the foot hereof ; wherefore we claim the sum of £ . . . , the amount of such value ; and we further declare that we had no ins. effected with any other office or offices, except as before mentioned.

The list of documents may be completed by the following : “ *Warehouse-keeper's Certificate*.—We hereby certify that the goods hereunder mentioned were in our custody, in a warehouse situate in . . . , at the time of the fire before referred to.—Signed,”
[WAREHOUSE-KEEPER'S BOOK.]

In the case of *Levy v. Baillie*, before the Courts in 1831, the facts were as follow. The plaintiff had effected a pol. against fire, with a condition that he should forfeit all benefit under the pol. if there was any fraud or false swearing in the claim he made. A fire ensued, and the plaintiff made affidavit of the damage to the extent of £1085 ; having sued for the amount, and a jury having found a verdict for him, with only £500 damages, the Court granted a new trial.

In the case of *Wright v. Pole*, before the Courts in 1834, it was *Held*, that an innkeeper, having ins. in the *Sun Fire* his interest “in the inn and offices,” could not, upon such inn and offices being partly burnt, recover against the insurers the loss sustained by his hiring other premises while his own were being repaired, or by the refusal of persons to go to the inn while under repair—the insurers having reinstated the premises in proper time.

It was decided in the case of *Simpson v. the Scottish Union Ins. Co.*, tried in 1863, that a tenant from year to year insuring is not limited in his claim on the ins. co. to the extent of his interest in the property insured.

Even where there is no fraud, the insured on a fire pol. can only recover the real amount of the loss. This was so held in *Goulstone v. Royal Ins. Co.*, tried in 1858.

Life Ins.—The main point to be guarded against is death by *suicide*, instead of from natural causes. We shall discuss this subject fully under SUICIDE. The other chief questions are “concealment” and “intemperance.” The points involved herein, as affecting life ins. claims, will be fully discussed under those heads ; while under DISEASED LIVES, and FRAUDS, much that is important will be found. Some considerations also arise under DAYS OF GRACE. See also PROOF OF DEATH.

Sometimes a death will be presumed, as where a ship in which the insured life sailed is never heard of, and from circumstances appears to have been overtaken by a storm in which other ships perished. So also a person goes abroad, and remains unheard of for a long period. See DEATH, PRESUMPTION OF.

The following curious and important point was determined *Obiter dictum* in 1786, in the case of *Locker v. Offley*. A person insured for one year only meets with a mortal wound, but does not die of the same until after the expiration of the policy. Mr. Justice Willis held the insurer was *not liable* : hence it is regarded as a principle that the loss itself, as well as the cause of loss, must have happened during the continuance of the pol. We do not remember any recent case on this point.

We have long felt that a complete statement of the aggregate claims paid by all the different life offices would operate as one of the most striking *popular* arguments in favour of the practice of Life Ins. Of course it is impossible to obtain such a return from the offices which have passed away ; but there ought to be no difficulty in obtaining the items from each existing office. Mr. William White, in his useful *Ins. Register*, did for one or two years give such returns for many of the offices. We shall hope under LIFE INS. CLAIMS to present such a T. in a completed form.

Marine Ins.—The following specific documents are usually required to substantiate claims. 1. *Protest*—to show the loss of or damage to the vessel. 2. *Bill of lading*—to show that the goods were on board. 3. *Invoice*—to prove value. 4. *Account Sales*—to show realization. 5. *Original vouchers*—to show amount expended in repairs, etc. 6. *Survey*—to prove damage. 7. Rate of *Exchange* of the day. 8. *Average Statement*. These being investigated and found correct, the underwriter indorses the claim papers as “settled.”

Weskett said in 1781 :

Proprietors, and their factors or agents, of ships or goods which have been wrecked, stranded, taken, retaken, seized, detained, or condemned, ought to use their utmost diligence in making claim thereof in due form, and furnishing proper and authentic *documents* to that effect, in cases where there is a right, and hope of recovery of salvage ; for negligence or inactivity on such occasions would be highly culpable and fraudulent with regard to insurers ; to whom, on their satisfying the loss, security ought to be given by the insured, or their agents, that such claim shall be duly made and prosecuted at the charge and with the advice and assistance of the insurers ; and also that they shall be reimbursed their due proportion of the value of all that shall be restored or saved. A master of a ship or cargo who may have fallen under the afore-mentioned or any similar circumstances, who leaves the place where they may have happened, without exhibiting authentic papers, and exerting his best endeavours to recover ship and cargo, or without duly claiming, appealing, etc., as the case may require, is liable to be sued, and to answer for not having done his duty.

Under CONCEALMENT and FRAUD many other points in connexion with marine claims will be discussed.

General Considerations.—It is a rule of law that the burthen of proof of the event insured against having happened rests with the insured, and not with the insurer. It is equally a rule that those who impute fraud must substantiate it, or abide by the consequences.

An action at Common Law may be brought in the name of the party or parties whose names are in the pol., or of one of them, where one is only interested. It is sufficient that the action be brought in the name of the party in the pol., though others are jointly interested, and though he be only agent. The action should not be brought against an agent, though he have subscribed the pol., but against the principal. In support of these positions see *Marsh v. Robinson*; *Cosack v. Wells*; *Parker v. Beasley*, and *Hagedorn v. Oliverson*.

In 1833—by 3 & 4 Wm. IV. c. 42, s. 29—it was provided that in certain actions, including those on ins. pol., a jury may “give damages in the nature of int. over and above the value of the goods.”

There are numerous cases in the law-books wherein money actually paid in respect of claims has been recovered by the insurers. The principle of recovery by the insurers is not restricted to the case of fraudulent claims, as is sometimes supposed. If a claim be settled by the insurers paying the amount under circumstances of mistake—mistake of facts, not of the law—which mistake could only have been prevented by the disclosure, at the time of settling the claim, of facts which were not disclosed, whether by fraud or in ignorance on the part of the insured, or with any other persons with whom knowledge of the fact rested, from this state of circumstances will result a rule that the amount paid for such claim shall be recovered by the insurers.—Beaumont's *Law of Fire and Life Ins.* In support of this view see *Forrester v. Pigou*; *Chatfield v. Paxton*; and *Lefevre v. Boyde*.

CLANCHY, D. T. L., was Sec. of *Equitable F.* from its commencement in 1850 down to 1852.

CLARENCE LIFE ASSU. SO., founded in 1854, with an authorized cap. of £100,000, in 20,000 shares of £5, and regis. under Joint-Stock Cos. Regis. Act. The orig. prosp. said:

The uniform success which has now for many years attended L. assu. sos. forms one of the most remarkable features in the monetary inst. of this country. It must strike every one as singular, that among the many enterprises of this kind begun during the last 50 years, scarcely an instance of failure has been known to occur; and it is equally remarkable that such of them as have been estab. for a period, to justify comparison, have proved themselves to be more remunerative than any other undertakings whatever.

It is therefore not to be wondered at, that so many assu. cos. should recently have become candidates for public favour and support; and that there is still a large field open for their operations is amply proved by the fact of the enormous increase of assu. effected within recent years. The skill and activity with which the younger cos. have made known their respective and peculiar recommendations have secured a degree of attention to the advantages and practice of L. assu. which were previously altogether unknown; and thousands of all classes now assure their lives, who, but a few years ago, were entirely ignorant of the benefits and blessings arising from such a system.

We next arrive at the “special features” of the office:

One of the most effective means for extending the bus. of a L. assu. co. is the estab. of an extensively ramified system of agency; and the success of some of the most prosperous institutions has been mainly attributable to the care bestowed on this department. It is therefore proposed by the promoters of this So. to give its regularly-appointed agents a direct and beneficial interest in its prosperity, and the D. of Sett. contains an express provision securing to them a share of the profits. The extent to which each agent will participate will depend on his own efficiency, and the degree in which, by his individual exertions, he has contributed to the So.'s prosperity—so that he will receive that fair and legitimate reward which ought to be considered as undoubtedly due to his labours.

It was estimated that this “extraordinary commission” would augment the ordinary commission by about three-fourths. Two other features were put prominently forward: (1) “Opportunities to assure will be afforded by the *Clarence L. Assu. So.* to every class of persons, as well in Gt. Brit. and Ireland, as in Her Majesty's Plantations or Colonies, and in all places beyond the Queen's dominions.” (2) “The promoters of the *Clarence L. Assu. So.* have resolved to develope the principle and system of granting loans in connexion with L. assu. beyond anything that has yet been offered for the accommodation and approbation of an important portion of the public” . . . The prosp. bore the signature of H. Lang, Sec.

We believe the Co. hardly got into full working before its bus. was trans. to *United Homœopathic*. This occurred in 1855.

CLARK, EBENEZER, JUN., Man. and Sec. of the *Emperor L.* and of the *Emperor F.* since 1856. Mr. Clark is an active worker in many movements in the direction of popular progress.

CLARK, GEORGE, Act. and Sec. of *Argus L.*, which positions he has held for many years. He entered the office in 1840 as chief clerk. He entered upon the actuarial duties of the Co. in 1841. In 1862 he became Sec. of the Co. also. Some years since he wrote a work upon Life Contingencies, which, however, has not been pub. He was Consulting Act. of the *Palladium*. Mr. Clark has displayed much tact in the manner in which he has harmonized the discordant elements consequent upon one or two unsuccessful attempts to terminate the existence of his Co. by amalg.

CLARK, JOHN, F.A.S., Edinburgh, Land and Tithe Agent, pub. in Gloucester in 1806, *An Inquiry into the Nature and Value of Leasehold Property, Reversionary Interest in Estates, and Life Annuities; with a variety of Tables, demonstrating the Ratio of Fines due on the*

Renewal of Leases of Church, College, and other Estates; and for the Purchase or Sale of Leases of every Denomination. 2nd. ed., London, 1808. [ANNUITIES.] [LEASES.]

CLARK, JOHN, for some years Man. Director of *European* (No. 1), and also of the *Beacon F.* In 1818 he pub., *Obs. on the Nature of Annuities, Life Ins., Endowments for Children, and Investments of Money for Accumulation; with a General Outline of the Plan, Laws and Regulations of the European Life Ins. Co.; to which is annexed a Slight Sketch of the Difference between Income derived from Annu. and that obtained in Perpetuity from Legal Int.* The tract was written and pub. with a view to improve the bus. interests of the *European* (No. 1), under which title we speak more at large of its contents. It was sold for 2s. 6d., which, however, was allowed to the purchaser on becoming a shareholder, annuitant, life insurer, etc., etc., in the said Co.

CLARK, SAMUEL, pub. in 1758, *The Laws of Chance; or, a Mathematical Investigation of the Probability arising from any proposed Circumstance of Play, applied to the Solution of a great variety of Problems relating to Cards, Bowls, Dice, Lotteries, etc.* [CHANCES, LAWS OF.]

CLARK, STEPHEN G., Counsellor-at-Law, editor of the 2nd ed. of *Digest of F. Ins. Decisions in the Courts of Gt. Brit. and N. America*, pub. 1868. The work is one of considerable merit and utility, and has received various improvements at Mr. Clark's hands.

CLARK, T. ALLEN, Sec. of *Home and Colonial Marine* since 1867.

CLARK, THOMAS, was, between 1852-54, Provincial Man. of *British Industry*.

CLARK, WILLIAM, was Act. and Sec. of *National Assu. and Investment*, at its commencement, and for several years afterwards. He next became Act. and Sec. of the *Tontine Life and Annu.*, and remained from its commencement for several years. In 1849-50 he was Act. and Sec. of *Consolidated*.

CLARK, WILLIAM, for some years Act. of *Dundee Marine*.

CLARKE, HON. JULIUS L., Ins. Commissioner for the State of Massachusetts since 1870. Mr. Clarke paid a visit to Europe in 1872, and made the personal acquaintance of a number of ins. men in Great Brit., by whom he is pleasantly remembered.

CLARKE, HYDE, pub. in 1855 *Statistics of Fire Ins. in 1853 and 1854*, reprinted from the *Land and Building News*. No great knowledge of the subject is displayed in this compilation.

CLARKE, ROBERT, Surgeon, read before the Statistical Section of the Brit. Asso. at Glasgow, in 1855, a paper, *Short Notes of the Prevailing Diseases in the Colony of Sierra Leone, with a Return of the Sick Africans sent to Hospital in 11 Years, and Classified Medical Returns for the Years 1853-4. Also Tables showing the Number of Lunatics admitted to Hospital in a Period of 13 Years, and the Number treated from 1st April, 1842, to 31st March, 1853.* This paper will be spoken of under SIERRA LEONE.

CLASS OFFICES.—These are offices especially intended to appeal to any one section or class of the community for their support. Many such offices have been founded in Great Britain; some in other countries, especially in the U.S. Among the earliest of such offices in this country were those appealing to the professional classes—especially to the Law. These are *Law Life* (founded 1823), *Legal and General* (1836), *English and Scottish Law* (1839), *Equity and Law* (1844), *London and Provincial Law* (1845), *Law Fire* (1845), *Law Property* (1850), *Law Union* (1855). The *Solicitors and General* (1845) has passed away. Then there are those connected with the Clergy, viz. *Clerical, Medical, and General* (1824), *University* (1825), *Clergy Mutual* (1829). As to the Medical profession, in add. to the *Clerical, Medical* (just named), there have been the *Medical, Legal, and General* (1846), and the *New Equitable* (1851). Coming to Denominational offices, we have the *Friends Provident* (1832), *National Provident* (1835)—each of these being mainly founded on Quaker influence and connexions. The *General* (1837) [orig. called *Dissenters and General*], appealing to the "Independents." The *Church of England* (1840), *Wesleyan and Gen.* (1841), *Star* (1843), supported by a powerful Wesleyan connexion. The *Scottish National* (1841) has or had much support from one section of the Church of Scotland; and the *British Empire Mut.* (1847) and the *British Equitable* (1854) have each been more or less associated with religious bodies. The *Catholic, Law, and General* (1846), the *Protestant* (1852), and the *English and Irish Church* (1853), have long since passed away. Looking in an opposite direction, there have been the *Licensed Victuallers* (1836) [afterwards name changed to *Monarch*], the *Brewers and Distillers* (1851), against which may be named, as a powerful set-off, the *Temperance and General* (1840). Turning to Fraternities, we have had the *Freemasons and General* (1838) [afterwards became the ill-fated *Albert*], and there is now the *Masonic and General* (1868). In the Agricultural interest there is the *Royal Farmers* (1840), and the *Norfolk Farmers* (1844). The *Agriculturist* (1845) has passed away. For Schoolmasters there has been the *Mentor* (1848), and the *Church of England Schoolmasters* (1850). The *Governesses Benevolent* (1843) is an annu. asso. Then there is the *Provident Clerks* (1840). And finally the Industrial offices, with the *Prudential* (1848) at the head [this Co. also transacts general life bus.], followed by the *Victoria* (1860), *Mutual Provident Alliance* (1847), the *National Industrial* (1854), the *Beehive Fire* (1870), and the *British Workman* (1871).

It will be seen from this enumeration that the various class interests have been pretty well looked after. The list might have been enlarged, but we are content to name the

prominent of each class. There was at one time another class distinction set up—that of “old” against “new” offices. It has happily died out.

CLASSIFICATION OF LOSSES.—Ins. offices transacting several distinct branches of bus.—as F., L., Marine—necessarily make some classification of their losses, to the extent of keeping those from each branch distinct. But offices limiting their bus. to one class of ins. only, such, for instance, as F., have learned the wisdom of keeping classified records of their losses, as against their income, from each class: as ordin. ins.; hazardous ins.; doubly hazardous ins.; special risks—these latter being even again subdivided. In this manner the soundness of a bus. may be preserved—for one or two classes of unprofitable risks may be found to consume the profits of many good classes. It is in regard to the nature of the risks entered upon that some offices with a small income make more profit over a series of years than those with much larger incomes.

Even in *Life* offices many most instructive results may be obtained by a careful classification of losses; while in *Accident* ins. it is one of the secrets of the bus. In *Fidelity* ins., in *Glass* ins., and, indeed, in all classes of ins. wherein the element of *moral* hazard is strongly infused, it must necessarily be so.

In *Marine* ins. the losses arising from the perils enumerated in the pol. are classified as (1) TOTAL LOSS; (2) AVERAGE; (3) CHARGES. These are spoken of under those particular heads. But as all risks undertaken are subject to each of these incidents, they do not illustrate our present purpose. The practical classification in marine ins. lies essentially in the determination of *whose*, as well as *what* risks to accept. [SELECTION OF RISKS.]

CLASSIFICATION OF POLICIES.—This is a process to which the pol. of a L. office are generally subjected, prior to the periodical valuation of assets and liabilities. Where each pol. is valued separately, a classification is not necessary; but it is still most desirable, if only as a means of check. In the first vol. of the *Assu. Mag.* Mr. C. Jellicoe, in a paper, *On the Determination and Division of Surplus, and on the Modes of Returning it to the Contributors*, reviews the question thus:

Having, then, determined on the true rates to be adopted in our calculations, and being provided with the usual T. of ann. and single prems., annu., etc., answering to such rates, *our next object will be to make a classification of all the assu. in accordance with the year in which the lives assu. may be severally born.* We are aware that it is a very common practice to estimate the value of each assu. separately, in which case a classification is of course not needed. The only good reason for a separate estimate arises in the also common practice of dividing the surplus in proportion to the difference between the amount of prems. at compound int. and the value of each assu.; and this, it will be seen, renders the determination of the latter indispensable. We believe, however, that we have clearly demonstrated, on a former occasion, that such a mode of division is entirely erroneous, and therefore there is no longer any corresponding advantage to compensate the excessive labour attendant upon a valuation of each risk separately; on the contrary a very great disadvantage arises from the increased liability to error which such a proceeding necessarily involves. As regards any difference in the results of a separate and classed valuation, all experienced computers will at once admit that it is wholly insignificant. We believe we are quite within the mark in saying that the results will be identical even when the number of assu. in each class does not exceed 6 or 8. If the number in many of the classes be less than these, there is certainly nothing to be gained by a classification; but otherwise it is undeniably the preferable alternative.

He then proceeds to make some practical suggestions regarding the process of classification, which it may be useful to reproduce in a condensed form here:

In proceeding to make the required classification, it will be found most convenient to assume that all the lives were born on that day of the year at which the valuation is supposed to be made; and we would suggest also that the entries be regulated *by the date of birth, and not by the office age.* The lives in each class will thus, on the average, complete a given number of years in the day to which the accounts are made up. We are not ignorant that it is usual to adopt the office age, on the plea that the error, on the average, of half a year in each case, caused by this arrangement, is in favour of the office. It is better, however, if avoidable [attainable?], that there should be no error; that the truth should be rigorously adhered to throughout; and that any safeguards which may be required should be matter of distinct consideration.

As will appear hereafter, it is not necessary to make any distinction between parti. and non-parti. pol.; the two may be blended together, provided only that they are for the whole term of life, and at a uniform prem.: it may perhaps be desirable to affix some distinguishing mark against them. Of course any add. already made to the sums assu. will have to be included, and due notice will have to be taken of any reduction in the orig. prem.; and on this, as well as on other accounts, it is better to have fresh lists at each valuation, and not a species of debtor and creditor account in which the number of existing assu. is found after deducting the terminated ones. It is not necessary to take note of prems. being payable half-yearly or quarterly; the equivalent ann. prems. may be safely substituted in each case. To pursue a different course would render the classification of such assu. impracticable, whilst no advantage would accrue from the separate estimate of their value.

It may be well to mention here, too, that where an extra prem. has been made for any deterioration in health, the corresponding age should always be considered as the true one, and the life classed accordingly. Where the extra prem. is on account of residence abroad, or for sea risk, it must be discarded and treated separately. If the extra charge be one in accordance with T. specially made for any given climate, as is now generally the case with Indian risks, the assu. itself will come under a different class altogether, and must of course be omitted—to be valued eventually on the same principles as regards foreign mort. as those adopted in reference to the native.

The reader will understand that, high as the authority of this writer stands in matters of practice, the improvements in practice must be followed irrespective of all authority to the contrary. Mr. Jellicoe's views were in advance of the time he wrote; yet practice has outstripped them. It is now found possible, by the aid of properly constructed valuation registers—in which all the required details must be entered concurrently with the *issue* of the pol., and which must be kept revised *with each change in any and every pol.*—to complete valuations in as many hours as days, or even weeks, were occupied formerly.

Under such a system accuracy need not be sacrificed to speed. By these means, aided by valuation T., such as have been specially prepared in the U.S., a revolution has been in recent years accomplished. [SURPLUS.] [VALUATIONS.]

CLASSIFICATION OF RISKS.—In nearly every branch of ins. bus. some classification of the risks to be accepted by the office has to be made. Even *Annuity* offices have found to their cost that selections can be made against them. They meet the difficulty by limiting the age at which they will grant annu. on the ordin. scale. The Classification of Risks in *Marine* ins. is more complicated and fluctuating, depending (*inter alia*) upon (1) class or character of ship; (2) character of master and owners; (3) nature of cargo—its liability to destruction by salt water, or damage by delay, and its own inherent nature; (4) season of the year; (5) peace or war. The Classification of *Fire* risks is (1) ordinary; (2) hazardous; (3) doubly hazardous; (4) special—with many different degrees regarding the latter. In *Accident* ins. the classification depends almost entirely upon the relative risk from “occupation.” In *Fidelity* ins. there is first personal character, next, occupation—as determining temptation and opportunity. In *Glass* ins. “occupation” is also an important element; but “location” is nearly as important an element; in some cases more so. In *Carriage* ins. “occupation” is necessarily an important element. In *Hail* ins. “location” is also very important. In *Cattle* ins. the classification (as we have seen) is primarily under broad distinctions; but the prevalence or otherwise of “Cattle Disease” must exercise an important influence.

Under CASUALTY INS. we have given an extract from De Foe's *Essay on Projects* (1697), which manifests much sagacity on the subject of Classification of Risks.

The preceding must be regarded as only a *résumé* of the main points to be borne in mind in relation to each branch of ins. bus. The subject is dealt with more at large in our chapters specially devoted to those branches, and under general heads—such as SELECTION, etc., etc.

CLAUSES, OCCASIONAL.—These are clauses relating to marine ins. pol., and employed for the purpose of varying the contract according to the special agreement of the parties. Hence they are called “occasional.” [OCCASIONAL CLAUSES.]

CLAVELL, ROGER, pub. about the middle of the 17th century, *Tabulæ Fœneratoriæ; or, Tables for the Forbearance and Discompt of Money. Likewise Tables for the Forbearance, Discompt, and Purchase of Annuities to 31 Years, at the Rate of £6 p.c. p.a., according to the Late Act of Parl., calculated by Roger Clavell, Gent., Student in the Mathematics.* 2nd ed., 1669, with additions, by T. R. [ANNUITIES.] [INTEREST.]

CLAYTON, F. S., Joint Sec. of *Equitable Reversionary* since 1855.

CLAYTON, JOHN, for many years Sec. of *Equitable Reversionary*; Joint Sec. since 1855.

CLEANLINESS, ITS INFLUENCE ON HEALTH.—The influence of cleanliness upon health is now so generally admitted that we need not occupy space in attempting to prove it. We shall merely record a few practical instances. It is in relation to zymotic diseases that cleanliness has the most important bearing. We have already spoken of this in relation to CHOLERA. Poverty and uncleanness usually go hand in hand; hence the cry, “Improve the social condition of the people, and you improve the health of the nation.” There is an important truth involved in this cry—improve the condition of a section, and you advance the health of the whole community. It is in this light that cleanliness becomes a public question. We may gather encouragement from what has already been accomplished.

In Lond. in 1850 there were 1308 lodging-houses regis. under the then new Act [LODGING-HOUSES], and during the quarter ending 23rd Oct. there had not occurred a case of fever in any one of these houses; yet before they were under regulation 20 cases of fever have been received into the Lond. Fever Hospital from a single house in the course of a few weeks. During the cholera outbreak of 1848 and 1849 no case occurred in any one of these dwellings, though the pestilence raged in all the districts in which they are situated, and there were instances of two, and even four, deaths in single houses close to their very walls.—Pamp. on *Sanitary Improvement*, by W. Lee, one of the superintendent inspectors of the Board of Health.

There is another, almost equally remarkable, case on record. The Chairman of the Metropolitan Association for Improving the Dwellings of the Industrious Classes reported in May, 1850, that while fever and cholera had been devastating whole districts in Lond., *not one of either of these diseases had occurred in their buildings.* The conditions under which these buildings are regulated are: 1. Thorough subsoil drainage of the site. 2. Free admission of air and light to every inhabited room. 3. The abolition of the cesspool, and the substitution of the water-closet, involving complete house drainage. 4. An abundant supply of pure water. 5. Means for the immediate removal of all solid house refuse.

Dr. Southwood Smith, in his pamp. on *Sanitary Improvement*, speaking of the dwellings of this Asso., said, “The deaths were at the rate of about 7 p. 1000, while the deaths in the whole of Lond. were 22 p. 1000; thus the dwellings of the so., though in Lond., were three times healthier than Lond. generally. With respect to children, the infant mort. had been little more than one-fifth of that in Lond. generally. There was also a comparative absence of sickness.”

The following are the statistics of the same buildings up to July, 1855, by which it will be seen some slight sickness had been experienced: Out of a pop. of 693 in the Old Pancras-road Buildings, there had only been 4 cases of diarrhoea. In the Albert-street Buildings, Mile End New Town, there had only been 4 fatal cases of cholera—a mother and three children; while 59 families under the same roof had enjoyed perfect exemption from it. In the chambers for single men in the same street, out of a considerable pop., there had been 2 cases of cholera, one of which proved fatal,—the patient having eaten stale crab. In the Soho Chambers, inhabited by 88 young men nightly, there had been only 7 cases of diarrhoea, while in its immediate neighbourhood the people were daily in large numbers dying of cholera. The total number of deaths in the dwellings of the Asso. from all causes had been, out of a pop. of 2200 persons, only 20. Of these 7 were adults and 13 children.

We need not continue the examples. The state of facts continues much the same. Are not these important considerations for F. sos. and industrial ins. asso.?

CLEAR DAYS.—If a certain number of clear days be given for the doing of any act, the time is to be reckoned exclusively as well of the first day as the last.—*Wharton*.

CLEARANCE.—A certificate that a ship has been examined and cleared at the Custom House.

CLEARING A VESSEL.—To clear a ship at the Custom House is to exhibit the documents required by law, give bonds, or perform other acts requisite, and procure a permission to sail, and such papers as the law requires. Called for brevity **CLEARANCE**.

CLEGG, BENJAMIN, one of the editors and proprietors of the *Insurance Record*; also agent in Lond. for the *Insurance Monitor* of New York.

CLEIRAC, M. ETIENNE, pub. at Bordeaux in 1647, *Us et Coutumes de la Mer, contenant les Jugemens d'Oleron, Ordonnances de Wisburg, de la Hanse Teutonique, et autres Pièces*. Another ed. in 1661 bearing the following altered title, *Les Us et Coutumes de la Mer. Divisées en trois parties. I. De la Navigation. II. Du Commerce Naval et Contrats Maritimes. III. De la Jurisdiction de la Marine. Avec un Traité des Termes de Marine*, etc. 4to., Bordeaux, 1661. The dedication of this volume to the Queen of France is signed by Estienne Cleirac, its author and compiler.—*Hendriks*.

In 1671 an ed. was pub. at Rouen. In 1709 the work was trans. and pub. in Lond. under the title, *A General Treatise of the Dominion of the Sea, and the complete body of the Sea Laws*. It was done into Dutch by Leclercq, and pub. in Amsterdam in 1757. An English trans. of these laws will also be found in Peter's *Admiralty Decisions*, pub. in Philadelphia in 1807. Pardessus has edited the same sea laws with great accuracy and ability. M. Cleirac's book is not merely a compilation; it is enriched with copious and learned notes, which entitle him to be placed in the very first rank of modern jurists. His writings are said to have been the source from which Lord Mansfield obtained many of the best principles of Common Law now prevailing in England.—*Marvin*.

CLELAND, DR. JAMES, was appointed to superintend the Census of Glasgow in 1821, [GLASGOW.] In 1823 he pub. a third ed. of *Statistical Tables relative to the City of Glasgow*. [MORT. OBS.] And in 1831 he pub. in a folio volume: *Enumeration of the Inhabitants of Glasgow and Lanarkshire*. These works will be quoted under various heads in this work.

CLELAND, WILLIAM, was at one period Sec. of Edin. branch of *North of Scotland*. He afterwards "promoted" several ins. asso., amongst them the following: (1) *General Industrial Life and Deposit*—(2) *Industrial and General*—(3) *National Industrial and Economic Life*. All put forward about 1849. In 1855 he became Sec. of *Peoples Provident* (in Lond.); and remained in that position down to 1864, during which period the name of the Co. became changed to *European* (No. 2). It was also during this period that many of the amalg. upon which the Co. entered were carried out. At the time Mr. Cleland retired from the management there was no immediate sign of collapse. The amalg. with the *British Nation* did not occur until 1865. Mr. Cleland aided in the recent estab. of the *Positive*.

CLEMENTS, J. T., was Act. of *Licensed Victuallers* from its commencement. In 1850 he became Man. also; and remained with the Co. down to the transfer of its bus. in 1857.

CLENCH, EDMUND, Financial Agent and Promoter of Ins. Asso.—Mr. Clench was inducted to ins. bus. in the office of the *Professional*; he passed from thence to the *Sea, Fire, Life*. In 1850 he was one of the promoters of the *Industrial Mut. Sick*. In 1851 he became Sec. of *National Provincial Life*. In 1852, one of the promoters of the *National Provincial Fire*. In 1856 he was one of the founders of the *Bank of Lond. Ins. Co.*—a very powerful organization, of which we have already given some account. Since that period he has been concerned in a bus. sense with various trans. and amalg. of ins. offices; we are not aware that he has promoted any new ones. It was at one period the fashion of the ins. press to abuse Mr. Clench. He made one uniform reply—that as a financial agent it was his business to deal with ins. asso., as with other enterprises. He could not *make* any co. sell its bus.; he could not *make* any co. purchase the bus. of another. He was employed to negotiate; he accomplished his work as speedily as possible, and took the stipulated commission. That class of bus. is, for the present, nearly exhausted.

CLENCH, THE CHEVALIER HARRY, was connected with the *Masonic* in 1869, for which Co. he afterwards proceeded to Plymouth to found a branch. While there he promoted the *Western Alliance* Fire. After that he was connected with the *Western Counties* Fire, which afterwards became the *Southern and Western* Fire. In 1872 he promoted the *British Commercial* [No. 2], of which we have already given some account. We believe he has more recently changed his residence.

CLENDINNING, JOHN, M.D., communicated to the *Statist. Journ.* in 1838 a paper: *On the Relative Frequency of Pulmonary Consumption and Disease of the Heart* (vol. i. p. 142). We shall speak of this paper under CONSUMPTION; and under HEART DISEASE.

CLERGY, CHILDREN OF THE.—See CLERGY, LONGEVITY OF.

CLERGY, DURATION OF LIFE AMONG.—See CLERGY, LONGEVITY OF.

CLERGY. INS. ASSO.—In 1710 a scheme was set on foot from the Wheatsheaf over against Tom's Coffee House in Russell St., Covent Garden, for an ins. asso. especially adapted to the clergy, and including the risk of being "sent as a missionary by the Corp. of the So. for the Gospel in Foreign Parts." We shall give more details under LIFE INS., HIST. OF.

CLERGY AND LAW LIFE ASSU. SO.—This co. was projected in 1847 by John King Kent, Gent. But no steps were taken after prov. regis.

CLERGY AND LAW MUTUAL LIFE ASSU. AND LOAN AND REV. INT. SO.—An asso. under this title was projected in 1846 by Mr. T. B. Stevens, solicitor, Tamworth. It did not proceed beyond prov. regis.

CLERGY, LONGEVITY OF.—The clergy of Gt. Britain, and we believe of most other countries, are proverbial for longevity. We propose to notice the various obs. which have been made on this subject.

The first recognition of the longevity of the clergy which we have met with occurred in the case of the *Berkshire and Counties L. Asso.*, founded in 1709. In prescribing the conditions of entrance, the prosp. stated, "A clergyman's age may be 65; any other must not exceed the age of 60."

In the 3rd ed. of Dr. Price's *Obs. on Rev. Payments*, pub. 1773, reference is made to several schemes promoted amongst the clergy and ministers of that period; some details of which we shall give under WIDOWS FUNDS; and although several expressions therein lead to the inference that the learned Doctor knew or suspected something of the superior longevity of the clergy and ministers, he does not make any direct statement thereon. It may be that this was a prudent piece of reserve on his part; for it is clear that, in the case of asso. for the BENEFIT OF WIDOWS, the expected long life of the husband would operate directly in favour of the asso.

In 1824 the *Clerical, Medical, and General L.* was founded. Although not limited to the clergy, it has a large number of clergymen upon its books; and its mort. has been most remarkably favourable.

In 1829 the Rev. John Hodgson founded the *Clergy Mutual Assu. So.*, being, he says, at that time impressed with the idea, "that duration of life amongst clergymen would, upon experiment being made, be found to be longer than that amongst laymen." This notion was then entirely the result of his own personal observation. He at that period entered upon an inquiry on this subject, the results of which were only completed in 1864, under which date we shall notice them fully.

In 1831 Mr. C. Turner Thackrah pub. the first ed. of his well-known work: *The Effects of the Principal Arts, Trades, and Professions, and of Civic States and Habits of Living, on Health and Longevity*, etc., etc.; and therein he says:

Ministers of religion have a similar alternation of study and exercise. The latter, however, is too gentle or restricted for muscular men. Their situation, and the ideas attached to it, unfortunately prevent their joining in sports or amusements, which produce a full circulation of the blood, and a full action of the viscera. Hence congestion of the venous system of the bowels is a frequent occurrence. The individuals of this class who are hard students may be referred to the section of literary men. Clergymen, who preach long, frequently, or with vehemence, as well as orators, actors, public singers, and persons who play much on wind instruments, are subject to pains in the chest, spitting of blood, and diseases of the larynx. *Ædema* of the glottis is particularly mentioned by Merat.

On the founding of the *Church of England L. and F. office* in 1840, a special reduction was made in the rates of prem. for insuring the lives of the clergy.

In the 6th R. of Reg.-Gen., pub. 1845, Dr. Farr gives a few interesting facts regarding the Clergy, etc. The mean age of 18 English bishops (including two archbishops), whose ages were given in Dodd's *Peerage*, was found to be 59.9 years in 1841. As their mean age at consecration was 46.8 years, they had been bishops 13.1 years. The entire 26 bishops (including the archbishops) had been bishops 13.6 years.

The mean age of the Pope and 60 cardinals at the date of their election [*Almanach de Gotha*, 1845] was 52.4. On 1st Aug., 1864, it was 60.9. They had therefore been cardinals 8.5 years. Dr. Farr arrives at the conclusion that "their life and health is therefore much below the standard of the *English T.*" (No. 1).

In 1846 Dr. Guy, M.D., read before the Statistical So. a paper, *On the Duration of Life among the English Gentry, with Add. Obs. on the Duration of Life among the Aristocracy* [reprinted in vol. ix. of *Statist. Journ.*, p. 37]. He says therein:—"From the foregoing considerations it is rendered in the highest degree probable, that for the greater part of life the gentry are more healthy than the aristocracy; and professional

persons (*chiefly clergymen*) more healthy than either of the others." Again, "I may so far anticipate the promised inquiry into the duration of life among the members of the several professions as to state that . . . 1239 deaths among the aristocracy yield an average of 67·59 years; while 950 clergy yield a mean of 68·75 years—a duration of life exceeding that of females, when young adults are included."

In the same year Dr. Guy read before the Brit. Asso. another paper, *On the Duration of Life in the Members of the several Professions* [paper reprinted vol. ix. *Statis. Journ.* p. 346]. He says:

The object of the present communication is to turn to account such facts, gleaned from the *Ann. Regis.*, as have not already been employed in a former essay. The facts in question consist of the ages at death of the members of the several professions classified as follows—Army, Navy, Clergy, Lawyers, Medical Men, Fine Arts, Literature and Science; to which are added persons engaged in Trade and Commerce. . . . The ages at death were taken without selection or exclusion, except of deaths by accident or violence; and, as in the case of all the classes the obituary extended over the same period of 85 years (from 1758 to 1843), and the facts are numerous, it is believed that the average will prove near approximations to the true durations of life. The subject of the essay will be further illustrated by facts derived from other sources.

The number of clergy observed upon was 963. Among these 2 had died at the age of 100; 1 at 103; 1 at 105; 1 at 106; and 1 at 108. The deaths between 90 and 100 were 39. After various comparisons of the figures before him, the learned writer states:

The clergy, it will be seen, attain a higher average, in whatever way the calculation is made, than the members of any other learned profession. They have the advantage of more than one year: an advantage not to be wondered at when it is considered how much larger a proportion of clergymen reside in the country; how much less they are exposed to fatigue and danger of infection than their brethren of the medical profession; and that they do not lead the sedentary life which falls to the lot of the lawyer. When these things are taken into account, the advantage of little more than one year possessed by the clergy will excite some surprise. The still smaller advantage which they claim over the gentry, to which class so large a portion of this profession belong, is still more remarkable, and not undeserving attention.

He found the average age of all the clergy under obs. who died at age 51 and upwards to be 74·04. He returns to the subject again in 1851.

In 1851 Dr. Guy read before the *Statis. So.* a paper, *On the Duration of Life among the Clergy* [*Statis. Journ.* vol. xiv. p. 289]. The writer refers to his essay read before the Brit. Asso. in 1846, and says:

The essay now referred to was intended to form the intro. to a series of communications in which the duration of life of each profession should be examined by itself, with the aid of new facts drawn from sources other than the *Ann. Regis.* The present essay is the first submitted to the So. in fulfilment of that intention. The facts which form the staple of it are drawn from four sources. 1. The County Histories of *Northampton, Cheshire, Berkshire, and Surrey*, and the *Hist. of Leeds*—which histories have already supplied materials for an *Essay on the Duration of Life among the English Gentry*. . . . 2. The *Ann. Regis.*, which, as has just been stated, supplied the facts for the essay just referred to. 3. Chalmers' *Biographical Dict.*, which, having been pub. between the years 1812 and 1817, affords the requisite data for determining the mean duration of life of professional men up to a comparatively recent period. 4. That portion of the obituaries of the *Gent.'s Mag.*, from 1834 to 1839 inclusive, which is headed "Clergy Deceased."

The learned writer offers some comments upon the peculiar characteristics which may be supposed to have influenced the data obtained from each of these sources. We do not think it necessary to follow him here. The data from the *Biographical Dict.* included some Dissenting ministers and a few Roman Catholic priests. He then proceeds to say that by means of the facts derived from these sources he had constructed a series of four T. Of these the first exhibits the number of deaths recorded during each year of life; the second the number and per-centage proportion at each quinquennial period; the third the number and per-centage proportion at each decennial period; while the fourth T. shows the mean age at death of all who die after completing their 25th, 30th, 40th, and 50th years respectively. We do not propose to follow the results of these T. A fifth T. was prepared, based upon "the first 1000 deaths occurring between the years 1834 and 1839 inclusive—omitting all clergymen not belonging to the Estab. Church." Upon this data Mr. Neison produced the T. which we shall give in our art. CLERGY, MORT. T. FOR THE.

Dr. Guy says that out of the above 1000 deaths, 80 were those of clergymen whose lives were spent in cities or large towns:

The average age at death of these 80 clergymen I have compared with the average age attained by other 80 clergymen, whose lives were passed in the rural districts. These latter were taken in the order in which they stood in the T. The following is the result of the comparison:

Clergy of Towns and Cities—average age at death	...	...	...	...	...	63·74
Clergy of Rural Districts	"	"	...	...	...	65·85
Difference						2·11

This difference of little more than two years in favour of clergymen resident in the country is founded upon too small a number of facts to be regarded in any other light than as a prob., to be confirmed or weakened by further comparisons to be hereafter instituted.

From the data before him Dr. Guy drew some other facts of interest. For instance, he says, "The mean age of clergymen born in the 18th century is shown by the T. to be 66·78; while the average age of 60 clergymen who died subsequently to the year 1817, and who were born towards the end of the 18th century, is no less than 70·30. This comparison affords a presumption in favour of a recent improvement in the duration of life among the clergy." He says:

Another question which the tabular abstracts from the *Biographical Dict.* afforded me the means

of discussing, though the data are very far from being sufficiently numerous, is the relative durations of life of married and single clergymen. It happened that out of the whole number of clerical biographies, there were 370 in which the clergymen are stated to have been married; and 31 in which they are stated to have led a single life. The mean results are embodied in the following T.:

	No. of Deaths.	Mean Age.	Greatest Age.
Married.....	370	68'65	100
Single.....	31	63'13	84
Difference .....	...	5'52	16

An average excess of 5½ years in favour of the married clergy, and a difference between the maxima of 16 years, is prob. too large to be attributable wholly to the insufficient number of facts. This T., therefore, may also be placed on record as estab. a prob., to be strengthened or weakened by the results of future inquiries.

In the tabular abstracts taken from Chalmers' *Dict.* it happened that the archbishops and bishops of the Estab. Church were distinguished from the body of the clergy. "I am therefore in a condition to show the average and greatest ages attained by them; and as I have also extracted from the *Art de Vérifier les Dates* the ages at death of 42 popes, and of 22 Romish saints, and from Alban Butler's *Lives of the Saints* the larger number of 141 deaths, I have appended a T. in which these several averages are contrasted." This is the Table:

	No. of Deaths.	Average Age.	Greatest Age.
Popes	42	72'33	100
Archbishops	35	71'37	90
Bishops	145	71'23	100
Saints of Romish Calendar (Butler's <i>Lives</i>)	141	69'25	120
Saints of the Romish Calendar (<i>Art de Vérifier les Dates</i>)	22	69'09	100

Dr. Guy says:

The averages in this T. are such as might have been expected. The popes, who for the most part have been elected at very advanced ages, survive by about one year the archbishops of the Established Church, who are appointed at a somewhat earlier period of life. The bishops of the Established Church come next in order, differing however very little from the archbishops. The saints of the Romish calendar attain a lower average age by about three years than the popes, and by about two years than the dignitaries of the Church of England. As, however, the saints of the Romish calendar are of a very mixed class, comprising several of the popes, some few kings, many heads of the monastic orders, and a certain proportion of ascetics, I do not attach any importance to the comparison now made; but allow the results to stand in the T., as possessing a certain amount of interest.

We hope that some day Dr. Guy will return to this very interesting subject.

At the census of 1851 the number of clergymen was found to be 17,320, bearing a proportion of '37 to the entire pop. The number of Dissenting ministers, 6405, being the proportion of '14 to the entire pop. The number of "priests and other religious teachers," 2252—proportion to pop. '05.

Mr. Joel Pinney, in his *Influence of Occupation on Health and Life*, pub. 1856, says, "The clergy live too inactive for great longevity."

The *British Alliance Ins. Co.*, projected in 1868, had a scheme of "annuities for clergymen," but no details are given of its precise nature. According to all reasoning, from the facts furnished by this art., the annu. to clergymen on their own lives should be less than on almost any other class of lives. That would not constitute a very hopeful "special feature."

In 1870 the *Ark Assu. So. of Scotland* was founded [called in this work *Ark* No. 3], and it offers special advantages to "ministers of religion," founded on "their marked superiority in duration of life."

In 1864 the Rev. J. Hodgson, the then Sec. of the *Clergy Mut.*, pub. *Observations in Reference to the Duration of Life amongst the Clergy of England and Wales; and (in an appendix) amongst the Children of Clergymen, etc.* To which was added a supplement by Mr. Samuel Brown, containing (1) A Table of Mort. deduced from observations amongst the clergy for a period of 100 years, 1760 to 1860, made by Mr. Hodgson. The author says:

No sooner was the *Clergy Mut. So.* estab. than I was awakened to the sense of the importance of ascertaining, by means of unimpeachable data, the duration of life, or in other words, the course which mort. had taken amongst the clergy, in large bodies of them, during a long series of years gone by, with a view of making the results serviceable as experiments to mark out what measures might from time to time be safely adopted by the C. M. Assu. So., for the more effectually carrying out its designs. Nothing of the sort, in respect to the clergy, had ever been attempted before, except upon information of so precarious a character, and upon principles so vague and open to objection, as to make the results altogether unfit for any useful practical purpose. So I entered upon this labour—for labour indeed it has been—commencing upon it in the latter end of the year 1829, and continuing it during hours of leisure up to its completion in the present year; and I now offer the results of it to the notice of those who are able to appreciate the beneficial uses to which they may be applied.

The author proceeds to tell us that 4965 clergymen—all of whom were incumbents of livings, and some of whom "are now alive, and remaining such," and 123 clergymen—all of whom were *Heads of Houses* in the University of Oxford, and "some of whom are now alive, and remaining such,"—making together a total of 5088 clergymen,—had been brought under obs., "so as to enable me to ascertain what was the exact duration of life in the case of every one of them whilst under obs." These were collected in 8 groups, in the following order:

1. All those who were incumbents in the several livings in the *Diocese of Canterbury*

on 1 June, 1779, being in number 247, and also of all those who subsequently became incumbents of the same livings in regular rotation from 1 January, 1779, to 1 January, 1849, being in number 809—making a total of 1056.

Obs. has been made by me upon these during a term beginning in the case of the 247 incumbents on 1st Jan., 1779, and in the cases of the 809, at the several dates of their appointments to their livings, and ending with regard to 587 who died previously to 1st Jan., 1859, at the dates of their respective deaths; and with regard to the remaining 469, at the dates of their livings becoming vacant otherwise than by death in the cases of those who vacated them previously to 1st Jan., 1859, and on 1st Jan., 1859, in the cases of those who remained incumbents at that date.

2. Incumbents of 522 livings in the *Diocese of Lincoln*, before its recent dismemberment, all of whom were ordained by Bishops of Lincoln.

My obs. has been made upon these during a term commencing with the several dates of their appointments to their livings between the years 1750 and 1842, and ending with regard to 325 who died previously to 1st Jan., 1857, at the dates of their respective deaths; and with regard to the remaining 197, at the date of their livings becoming vacant otherwise than by death in the cases of those who vacated them previously to 1st Jan., 1857; and on 1st Jan., 1857, in the cases of those who remained incumbents at that date.

3. Contains 772 incumbents of livings in various parts of E. and W., all of whom were *Graduates of Oxford*, and of whom dispensations to hold two livings were granted by the Archbishop of Canterbury in the years 1760, 1761, 1762, 1763, 1764 and 1776, and in every subsequent year up to 1836:

My obs. has been made upon these during a term commencing with the several dates of their respective dispensations, and ending with regard to 690 who died previously to 1st Jan., 1860, at the dates of their respective deaths; and on 1st Jan., 1860, with regard to the remaining 82 who then remained incumbents, except in the cases of a very few of them who vacated their livings before 1st Jan., 1860, and upon such occasion took no other preferment.

4. Contains 640 incumbents of livings, all of them being *Oxford Graduates*, and is composed of three smaller groups, viz. (A) 144 incumbents of various livings in the County of *Northampton*, some of them having been such incumbents on 1 January, 1760, and others having been appointed to their livings at various times subsequently. (B) 430 incumbents of various livings in the *Diocese of Lincoln*, some of them having been such incumbents on 1 January, 1760, and others having been appointed to other livings at various times subsequently. (C) 66 incumbents appointed to livings in the *Diocese of Lincoln* during the episcopate of Bishop Lowth:

My obs. has been made upon these 640 incumbents during a term commencing in the case of some on the 1st Jan., 1760, and in the cases of the remainder with the dates of their respective appointments, and ending with regard to 447 who died previous to 1st Jan., 1857, at the dates of their respective deaths; and with regard to the remaining 193, ending at the dates of their livings becoming vacant otherwise than by death, in the cases of those who vacated them previous to 1st Jan., 1857; and ending on 1st Jan., 1857, in the case of those who remained incumbents.

5. Containing 213 incumbents of livings, all of whom were *Graduates of Oxford*, or had been ordained by Bishops of Lincoln:

My obs. has been made upon these during a term commencing with regard to some of them on 1st Jan., 1829; and with regard to the remainder on 1st Jan., 1836; and ending with regard to 149 who died previous to 1st Jan., 1861, at the dates of their respective deaths; and with regard to the remaining 64, at the dates of their livings becoming vacant otherwise than by death in the cases of their having vacated them previously to 1st Jan., 1861; and on 1st Jan., 1861, in the cases of those who remained incumbents at that date.

6. All those Scholars of *Westminster School*, being in number 437, who in Phillimore's *Hist.* of the Scholars of such School are noticed as being incumbents of stated livings—their names and ages at admission into college being specified therein, and the dates of their appointments: such appointments beginning to be made in the early part of the 18th century, and continuing up to the middle of the present:

My obs. has been made upon these from the dates of their respective appointments, during a term commencing with the dates of such appointments, and ending with regard to 320 who died previously to 1st Jan., 1859, at the dates of their respective deaths; and with regard to 117, at the dates of their livings becoming vacant otherwise than by death, in the case of those who vacated them previously to 1st Jan., 1859; and on 1st Jan., 1859, in the case of those who remained incumbents.

7. Contains 123 *Heads of Houses* in the *University of Oxford*, viz. those who were such on 1st Jan., 1760, and those who severally succeeded to them from time to time until the year 1854. Two or three of these Heads of Houses were laymen. Judge Blackstone was one of these, and died early.

My obs. has been made upon those who were Heads on 1st Jan., 1760, during a term commencing with that date, and upon all others during a term commencing with the dates of their respective appointments, and ending with regard to 109 who died previous to 1st Jan., 1863, at the dates of their respective deaths; and with regard to the remaining 24, on 1st Jan., 1863, at which date they continued to hold their offices.

8. Contains 1325 incumbents of livings, who, *upon invitation made by me to the clergy in general*, in the public journals and by letter, forwarded to me their names, dates of birth, and the names of their livings.

My obs. has been made upon 1014 of these during a term commencing with the dates at which the information was given, either in the year 1838 or 1839 or 1840, and upon the remaining 311 during a term commencing with May, 1851, and ending, with regard to 495 who died previous to 1st Jan., 1861,

at the dates of their respective deaths; and with regard to the remaining 830, at the dates of their livings becoming vacant otherwise than by death in the cases of those who vacated them previous to 1st Jan., 1861, and on 1st Jan., 1861, in the cases of those who remained incumbents at that date.

We have given these minute details, because the great care indicated therein gives confidence to those who understand the subject; or as the author says:—"As the value of the results of so important an investigation as the present *depends entirely upon the accuracy of the information obtained by me whilst following it up, I now proceed to estab. my claim to full confidence in this respect.*" The information he obtained exists in diocesan regis. and other ecclesiastical offices; and to these he appears to have had ready access. He tells us, "Having had access to the Ordination papers of nearly 2000 clergymen, *I made copies of the baptismal regis. found in them.*" Further information as to the dates of deaths and resignations "was supplied by obituaries in magazines and newspapers, and by communications from friends, as well as by means of the copies of diocesan returns in the Queen Anne's Bounty Office," of which his brother was Sec. In many other ways he vouches for the care he has exercised in the progress of his work.

The most scrupulous care has been taken that no incumbent shall be brought under obs. in more than one group *at the same time*. If the same incumbent be found in two or more groups, it is to be taken for granted that he was withdrawn from obs. in any one group before he was introduced for obs. into any other. Out of 5088 incumbents under obs., it may be considered that 5000 were distinct individuals.

Finally :

I cannot too emphatically declare that throughout the whole of my investigation I have been well aware how necessary it was to avoid forming specious conjectures or eluding difficulties, or in any way putting what might be thought a better appearance upon the inquiry, and I have most carefully abstained from anything of the kind. No labour has been spared to trace out a life, a death, or an age; and, except *in a very few cases*, with success.

Dr. Hodgson, reviewing the results of his labours, finds "that which for various reasons was to be expected has been realized. *The average duration of life amongst clergymen is now proved, by decisive evidence, to be longer than amongst large bodies of persons taken indiscriminately.*" He volunteers a suggestion not to be disregarded :

It is my opinion that the lives observed upon, though of course gathered together without any knowledge of the health or constitution of the parties at the time of their first being brought under observation, *are not to be viewed altogether in the light of "unselected."* The two facts of their having incumbencies bestowed upon them by patrons, and of their accepting them when offered, warrants the inference that at such time health prevailed amongst them rather than otherwise. *At the same time I am bound to say that in former days it was not a very unusual proceeding, for the sake of the sale of an advowson or next presentation, to present an ailing man to a living with a view to the occurrence of a not very remote vacancy.* My opinion as above given is strengthened by a somewhat earlier mort. being found, I think, amongst those incumbents and others who are brought under obs. *at a particular date* during their incumbency, and not at the date of their appointments. These, however, are comparatively few in number.

The following T. embodies all the more important results of Mr. Hodgson's investigations; and also shows in quinquennial divisions the rate of mort. p.c., according to obs. made during the years of age comprehended within such divisions; and also, for the sake of comparison, the rate of mort. p. c. as deduced from the *Experience of the Clergy Mut. Assu. So.*; the *Equitable Assu. So.*; and that of the 17 Life Assurance offices [*Experience T. No. 1*], as well as that set forth in the *Carlisle T. of Mort.*

Ages.	Entrants during the Five Years.	Number under observation.	Number of Deaths.	1 Rate of Mort. p.c. according to Mr. Hodgson's Table.	2 Rate of Mort. p.c. according to Clergy Mut. Assu. So.'s experience.	3 Rate of Mort. p.c. according to the experience of the Equitable Assu. So. (Morgan).	4 Rate of Mort. p.c. according to the Experience T. No. 1.	5 Rate of Mort. p.c. according to the Carlisle Mort. T.
24—30	1194	4448	20	0.45	0.43	0.77	0.80	0.83
31—35	769	7206	46	0.64	0.28	0.88	0.89	1.02
36—40	741	10,340	73	0.71	0.64	1.03	0.99	1.15
41—45	655	12,559	115	0.92	0.52	1.18	1.13	1.45
46—50	568	14,155	160	1.13	0.70	1.38	1.43	1.41
51—55	401	14,296	265	1.85	1.21	1.85	1.91	1.61
56—60	268	12,975	297	2.29	2.63	2.68	2.65	2.50
61—65	211	10,977	379	3.45	2.22	3.72	3.79	3.84
66—70	123	8550	426	4.98	2.77	5.48	5.55	4.66
71—75	78	5901	490	8.30	—	7.89	8.13	7.67
76—80	52	3359	423	12.59	—	11.18	11.88	11.08
81—85	19	1478	262	17.73	—	17.97	17.22	14.88
86—90	8	488	122	25.00	—	—	—	—
91—95	1	95	39	41.05	—	—	—	—
96—100	—	18	4	22.22	—	—	—	—
101	—	—	1	—	—	—	—	—

From the preceding data, Mr. Samuel Brown has constructed a T. of the mort. experienced by clergymen, which we shall give under CLERGY, MORT. T. FOR.

In the U.S. some attention has been drawn to the longevity of the clergy. According to statistics compiled in Massachusetts by order of the Legislature, about 1857, it was found that the mean age attained by clergymen was about 56·72 years. Another tabular statement compiled from statistics of that State, and of New York and Rhode Island, gave the average longevity of clergymen from 389 deaths at 55·36. The 22nd Regis. Report of Massachusetts gave the average at death of 472 clergymen as 59·25 years.

In the *Ins. Monitor* (U. S.) for August, 1872, its ed., Mr. Hine, presents some obs. on the duration of life among the clergy in the U. S., possessing great interest. We shall furnish a condensed outline of the leading features. The writer says :

No class of insured have enlisted so much interest regarding the duration of life among them as the clergy. That the clergyman enjoys a longer lease of life than those engaged in any other calling, except the agriculturist, has been shown by the high average age they both attain in this country and elsewhere. But beyond the imperfect comparison thus instituted between the members of the different professions, we do not know that any effort has been made to note the special mort. among those engaged in the sacred calling. The ministry furnishes a large per-centage of the applicants for ins. . . .

We are then informed of the sources from which the present information has been obtained :

Andover and Princeton contain the two oldest and most prominent theological seminaries in the U.S. The former was opened for instruction in 1808, and the latter in 1812. Andover is Congregational, and Princeton is Presbyterian ; so that the great majority of those observed upon belong to those two large branches of the Reformed Church, and *their homes have been scattered through every section of the Union*. Down to 1870 Princeton had educated no less than 2895 students ; and Andover 2474. In both inst. careful records have been kept of the subsequent movements of their alumni—embracing all the changes they have assumed, with the dates and occupations of such as either temporarily or permanently retired from their profession. The career of each man is thus traced down to the present time, or to his death. The date of each death is recorded, and in the records of Andover the age of the party at the time of his death. These statistics are very complete. Less than 30 of all the students at Andover have been lost sight of since they left the inst. *We have thus secured the three data necessary for obtaining the statistics of mort.*—the number who entered or graduated from the seminaries in each year, and the dates and ages of such of them as have died. Proper deductions have been made for the few whose subsequent career has not been traced.

The average age of those graduating at Andover has been 27·18 years, of whom all but about 8 p. c. were between 22 and 32 ; 25 p. c. were between 23 and 25 ; 34 p. c. between 26 and 28 ; and 29 p. c. between 29 and 31. The average age at Princeton has been 27·17, and the distribution is similar. The results of the mort. at each age after matriculation are given in detail. We must be content with the following summary, placed in comparison with the mort. shown by the *American Experience* T. 1868 (Homans) :

Age.	Mort. p. c. Andover.	Mort. p. c. Princeton.	Mort. p. c. American Experience.
25—30	6·28	5·83	4·94
31—35	4·71	4·83	4·36
36—40	4·36	4·10	4·71
41—45	4·29	4·82	5·27
46—50	5·15	4·80	6·29
51—55	5·48	6·11	8·22
56—60	8·64	8·41	11·56
61—65	15·09	11·86	17·11
66—70	17·92	21·75	26·21
71—75	25·13	36·74	40·30
76—80	35·83	49·25	61·04

The compiler remarks :

The value of these statistics is much enhanced through their being drawn from two independent sources ; and their comparison will show at once that the law observed by these per-centages is not due to accidental fluctuations arising from a limited number of obs. . . . The comparison of these figures with those of the *American Experience*, which above 30 is more favourable than any other standard in use among us, shows that the same law of mort. has ruled among the members of both inst. : that this law is one essentially different from that observed in the American T., and differs still more widely from the English. . . . Taking the sum of the total [per-centages] from 25 to 70, they are 71·92 and 72·51, against 88·67 according to the American T. Such is the close correspondence observed between the mort. of the two inst. : the accidental fluctuations of one age being so closely bal. by those of another, that the difference between the sum of the per-centages of the two seminaries amounts to only *fifty-nine hundredths of a year*.

We next have a mort. T. deduced from the combined results (which at the earlier ages embraced nearly 5000 individuals, and more than a 1000 at age 60), starting at age 25. The number surviving at that age, out of 100,000 at the age of 10, according to the *American Experience* T., 1868, is 89,032 ; and according to the *Experience* T. No. 1 [English] 89,835. The same radix therefore has been adopted for the *American Clergy* Mort. T. We add the "Expectation" at quinquennial periods, given by the compiler in a separate table.

Mort. T. of the American Clergy, showing the numbers surviving at each age, and the "Expectation" at quinquennial ages, compared with the *American Experience*, and [English] *Experience T. No. 1.*

Age	Amer. Clergy.		American Exp.		[English] Exp. No. 1.		Age	Amer. Clergy.		American Exp.		[English] Exp. No. 1.	
	Sur- viving.	Expec- tation.	Sur- viving.	Expec- tation.	Sur- viving.	Expec- tation.		Sur- viving.	Expec- tation.	Sur- viving.	Expec- tation.	Sur- viving.	Expec- tation.
25	89,032	40'9	89,032	38'8	89,835	38'0	55	66,533	20'1	64,563	17'4	63,469	16'9
26	88,293		88,314		89,137		56	65,553		63,364		62,094	
27	87,547		87,596		88,434		57	64,493		62,104		60,658	
28	86,632		86,878		87,726		58	63,411		60,779		59,161	
29	85,608		86,160		87,012		59	62,430		59,385		57,600	
30	84,652	38'0	85,441	35'3	86,292	34'4	60	61,409	16'2	57,917	14'1	55,973	13'8
31	83,738		84,721		85,565		61	60,124		56,371		54,275	
32	82,883		84,000		84,831		62	58,693		54,743		52,503	
33	82,083		83,277		84,089		63	57,269		53,030		50,661	
34	81,252		82,551		83,339		64	55,861		51,230		48,744	
35	80,471	34'7	81,822	31'8	82,581	30'9	65	54,474	13'0	49,341	11'1	46,754	11'0
36	79,821		81,090		81,814		66	52,948		47,361		44,693	
37	79,212		80,353		81,038		67	51,120		45,291		42,565	
38	78,510		79,611		80,253		68	49,133		43,133		40,374	
39	77,740		78,862		79,458		69	47,293		40,890		38,128	
40	77,068	31'1	78,106	28'2	78,653	27'3	70	45,479	10'0	38,569	8'5	35,837	8'5
41	76,510		77,341		77,838		71	43,308		36,178		33,519	
42	75,891		76,567		77,012		72	40,411		33,730		31,159	
43	75,128		75,782		76,173		73	38,774		31,243		28,797	
44	74,358		74,985		75,316		74	36,712		28,738		26,439	
45	73,707	27'4	74,173	24'5	74,435	23'7	75	34,398	6'6	26,237	6'3	24,100	6'5
46	73,062		73,345		73,526		76	32,072		23,761		21,797	
47	72,409		72,497		72,582		77	29,898		21,330		19,548	
48	71,722		71,627		71,601		78	27,672		18,961		17,369	
49	71,080		70,731		70,580		79	25,323		16,670		15,277	
50	70,323	24'4	69,804	20'9	69,517	20'2	80	23,250		14,474		13,290	
51	69,499		68,842		68,409		81	20,915		12,383		11,424	
52	68,681		67,841		67,253		82	18,247		10,419		9,694	
53	68,010		66,797		66,046		83	16,164		8,603		8,112	
54	67,366		65,706		64,785								

This table, we are told, is based entirely on the per-centages, and adheres rigidly to the facts as there exhibited. The only adjustment attempted is the removal of the "grosser inequalities" by means of a simple formula; and this adjustment has been carried but one step. The author says:

It appears from these extended statistics that the greater longevity ascribed to the clergy is not a mistaken idea. But this higher longevity does not cover the whole period of life. On the contrary, the life of the clergyman may be divided into two epochs, from age 24 to 35—and from that age onward. During the first of these periods, so far from enjoying a reduced mort., the rate is *much higher than that exhibited by our own or any of the English standards*. Instead of increasing, the rate actually diminishes with advancing age until 35 is reached, and remains nearly stationary until past 40. So that it actually costs more to insure a clergyman's life between 25 and 35 than it does for the ten years following. The mort. at the earlier ages is so much greater than that of the *American [Experience] T.*, that the more favourable mort. afterwards does not suffice to make good the loss until the age of 47. Nor is this feature an anomaly in the statistics of American life. More than a year ago we called attention to the same fact as shown in the experience of the *Massachusetts Cos.*, collated by the Hon. Elizur Wright. . . . The experience of the *Mutual Benefit*, pub. during the first 11 years, also exhibited the same high mort. at the younger ages. That the unadjusted experience of the *Mutual Life* was of a somewhat similar character, we judge from the higher mort. of this T. during the same ages compared with the English standards. . . .

The writer is of opinion that future experience may show that the period between 15 and 30 is a much more critical one in America than in England. "The extremes of temperature, and its sudden changes, it is not unlikely, will be found to operate with more fatality on the formative period of life in America than in England." He continues:

The members of this profession, as a class, are peculiarly subject to influences productive of such a result. They pass directly from the school to the college, and from the college to the seminary, where their life is extremely sedentary, and in many cases almost monastic. From the seclusion of student life they enter upon the active duties of a profession which imposes its heaviest labours on the beginner. *Under these circumstances, it is a notorious fact that a heavy per-centage of our young men break down just when they are entering on their work.* From 35 onward, however, the superior longevity of the clergyman tells strongly in his favour, and the advantage increases with age. Between 35 and 50 the advance is but little more than enough to make up for the losses below 35: so that a pol. issued at 25, and terminating at any time before that date, would gain nothing on mort. if issued on the *American Experience*. Beyond 50 the breach rapidly widens. At 60, 61,409 are living, against 57,917 in the *American T.*, and only 55,973 in the *Actuaries [Experience T. No. 1]*. At 70, 45,479 survive, against 38,569 and 35,837 in the other T.; while at 80 the difference amounts to more than a third of the entire number. *Here we discover the source of the high average longevity so often noted. It arises from the larger number of those surviving at the advanced ages.*

This is fully shown in the "Expectations" at the higher ages in the T. last given. The concluding obs. deserve attention, for they serve to show some of the points wherein the American clergy differ from our "clergy,"—limiting the term strictly to those associated with our Etab. Church,—and prob. approximate more nearly to our Dissenting ministers:

The mort. among the Methodist clergy, from all that we can learn, is much more unfavourable than

among the other branches. Taken as a class, their life is radically different. A large proportion of them are lay preachers, or engaged in other vocations. The emotional element enters more largely into their services, and the strain on the nervous system is greater. Their life is subjected to greater hardships, and every two years they are trans. to a new field. *These statistics, therefore, would not prob. represent the Armenian branch of the Church.* The American clergyman, like the farmer, has a life of privation and often of hardship; but, by way of compensation, both are granted a longer lease. If successful in passing the critical years, when a harsh climate and confined study combine to break down the constitution, and act with special energy against the lungs, the American minister may anticipate a green old age, unsurpassed in vigour and duration even by the agriculturist. From 35 onwards no better life can be secured by the Cos. than his.

We hope that further obs. and statistics on this interesting subject may in due time be forthcoming.

CLERGY, MORTALITY TABLES FOR THE.—It will be more convenient for reference if we give the Mort. T. which have resulted from the preceding obs. in a distinct form. There is indeed only one complete T., viz. that prepared by Mr. Brown from the Rev. John Hodgson's data (1864). For purposes of comparison, we give Mr. Neison's T. of "Expectations," deduced from the data of Dr. Guy (1851). In chronological sequence this stands first, and we so place it. We do not bring forward the American Clergy T., for the reason already indicated—that we do not think its results can be put in comparison with the results deduced from obs. on the "clergy" in this country.

The following is Mr. Neison's Table :

EXPECTATIONS OF THE LIFE OF THE CLERGY—1834-39.

Age.	Expectation.	Age.	Expectation.	Age.	Expectation.	Age.	Expectation.
25	39.2953	44	26.3575	62	13.1147	80	4.9024
26	38.4953	45	25.6767	63	12.4505	81	4.6170
27	37.7567	46	24.9304	64	11.7814	82	4.3287
28	37.0662	47	24.1810	65	11.1920	83	4.2144
29	36.4112	48	23.1748	66	10.6132	84	3.7721
30	35.7809	49	22.4700	67	10.0482	85	3.5004
31	35.1579	50	21.7624	68	9.5589	86	3.2306
32	34.5320	51	21.3584	69	9.0759	87	2.9590
33	33.9010	52	20.2065	70	8.6167	88	2.6853
34	33.2632	53	19.4600	71	8.1786	89	2.4100
35	32.6190	54	18.7215	72	7.7545	90	2.1347
36	31.9673	55	17.9920	73	7.3456	91	1.8641
37	31.3787	56	17.3119	74	6.9522	92	1.6111
38	30.6398	57	16.5643	75	6.5608	93	1.3666
39	29.9636	58	15.8288	76	6.2014	94	1.1250
40	29.2777	59	15.1702	77	5.8690	95	.8888
41	28.5152	60	14.4806	78	5.5374	96	.6660
42	27.8700	61	13.7938	79	5.2189	97	.5000
43	27.1483						

In 1864 Mr. Samuel Brown deduced from the data prepared by the Rev. John Hodgson, and of which we have given a full account under **CLERGY, LONGEVITY OF THE**, a very complete T. of the mort. experienced by the clergy of England. Mr. Brown in the first instance condensed Mr. Hodgson's T. into the following form :

OBS. OF MORT. AMONGST THE CLERGY OF ENGLAND AND WALES, FROM 1760 TO 1860, MADE BY THE REV. JOHN HODGSON.

Ages.	Continu-ants.	Entrants.	Withdrawn from Observation.	Numbers Observed.	Died.	Rate of Mortality p.c.	
						Clergy.	Farr's Healthy Life Tables.
24—35	9073	1783	113	9945	58	.583	.818
35—45	21,391	1443	262	21,946	172	.784	.928
45—55	28,187	1036	444	28,322	387	1.366	1.273
55—65	25,134	515	608	24,723	666	2.694	2.594
65—75	16,075	214	366	15,505	889	5.734	5.486
75—85	6072	84	149	5612	748	13.328	12.817
85—95	887	13	23	767	194	25.293	28.350
95—102	31	0	1	25	8	31.993	40.
	106,850	5088	1966	106,845	3122	2.922	

Then follows his mort. T., of which the following are the leading features, arranged in conformity with other tables presented in this work—the expectations being shown in comparison with those of several other tables.

A TABLE OF MORT. DEDUCED FROM OBS. AMONGST THE CLERGY, 1760 TO 1860, MADE BY THE REV. J. HODGSON.

Age.	1	2	3						8	9	10	Age.
	Living.	Dying.	Living in the middle of the year.						Carlisle Table.	Equitable Exp. (Morgan).	Experi-ence Table (No. 1).	
24	10049	49	10025	'0049	'9951	41.62	40.62	38.59	38.84	38.86	24	
25	10000	50	9975	'0050	'9950	40.83	39.93	37.86	38.12	37.98	25	
26	9950	52	9924	'0052	'9948	40.03	39.23	37.14	37.41	37.27	26	
27	9898	52	9872	'0053	'9947	39.24	38.54	36.41	36.70	36.56	27	
28	9846	54	9819	'0055	'9945	38.44	37.84	35.69	35.98	35.86	28	
29	9792	55	9765	'0056	'9944	37.65	37.15	35.00	35.26	35.15	29	
30	9737	57	9708	'0058	'9942	36.86	36.45	34.34	34.53	34.43	30	
31	9680	58	9651	'0060	'9940	36.07	35.74	33.68	33.81	33.72	31	
32	9622	60	9592	'0062	'9938	35.29	35.04	33.03	33.08	33.01	32	
33	9562	60	9532	'0063	'9937	34.51	34.33	32.36	32.36	32.30	33	
34	9502	62	9471	'0065	'9935	33.72	33.62	31.68	31.65	31.58	34	
35	9440	63	9409	'0067	'9933	32.94	32.90	31.00	30.93	30.87	35	
36	9377	64	9345	'0069	'9931	32.16	32.18	30.32	30.22	30.15	36	
37	9313	66	9280	'0071	'9929	31.37	31.46	29.64	29.50	29.44	37	
38	9247	69	9212	'0074	'9926	30.59	30.74	28.96	28.79	28.72	38	
39	9178	70	9143	'0076	'9924	29.82	30.02	28.11	28.09	28.00	39	
40	9108	71	9073	'0078	'9922	29.05	29.29	27.61	27.40	27.28	40	
41	9037	74	9000	'0082	'9918	28.27	28.56	26.97	26.69	26.56	41	
42	8963	78	8924	'0087	'9913	27.50	27.84	26.34	25.99	25.84	42	
43	8885	81	8844	'0092	'9908	26.74	27.11	25.71	25.29	25.12	43	
44	8804	86	8761	'0097	'9903	25.98	26.38	25.09	24.58	24.40	44	
45	8718	90	8673	'0103	'9897	25.23	25.65	24.46	23.87	23.69	45	
46	8628	94	8581	'0109	'9891	24.49	24.92	23.82	23.17	22.97	46	
47	8534	98	8485	'0115	'9885	23.75	24.20	23.17	22.47	22.27	47	
48	8436	102	8385	'0121	'9879	23.02	23.47	22.50	21.77	21.56	48	
49	8334	106	8281	'0128	'9872	22.30	22.75	21.81	21.07	20.87	49	
50	8228	112	8172	'0136	'9864	21.58	22.03	21.11	20.36	20.18	50	
51	8116	118	8057	'0145	'9855	20.87	21.32	20.39	19.66	19.50	51	
52	7998	124	7936	'0155	'9845	20.17	20.61	19.68	18.98	18.82	52	
53	7874	131	7809	'0166	'9834	19.48	19.90	18.97	18.30	18.16	53	
54	7743	137	7674	'0178	'9822	18.80	19.19	18.28	17.64	17.50	54	
55	7605	144	7533	'0190	'9810	18.13	18.49	17.58	16.99	16.86	55	
56	7461	152	7385	'0203	'9797	17.47	17.79	16.89	16.34	16.22	56	
57	7309	158	7230	'0217	'9783	16.83	17.10	16.21	15.71	15.59	57	
58	7151	166	7068	'0232	'9768	16.19	16.41	15.55	15.09	14.97	58	
59	6985	174	6898	'0249	'9751	15.56	15.73	14.92	14.49	14.37	59	
60	6811	181	6720	'0266	'9734	14.94	15.06	14.34	13.91	13.77	60	
61	6630	190	6535	'0286	'9714	14.34	14.41	13.82	13.35	13.18	61	
62	6440	198	6341	'0308	'9692	13.75	13.78	13.31	12.79	12.61	62	
63	6242	207	6139	'0332	'9668	13.17	13.17	12.81	12.23	12.05	63	
64	6035	216	5927	'0357	'9643	12.60	12.58	12.30	11.68	11.51	64	
65	5819	224	5707	'0385	'9615	12.05	12.00	11.79	11.13	10.97	65	
66	5595	232	5479	'0415	'9585	11.51	11.44	11.27	10.61	10.46	66	
67	5363	239	5243	'0446	'9554	10.99	10.90	10.75	10.11	9.96	67	
68	5124	247	5001	'0481	'9519	10.48	10.37	10.23	9.62	9.47	68	
69	4877	252	4751	'0518	'9482	9.98	9.86	9.70	9.15	9.00	69	
70	4625	258	4496	'0557	'9443	9.50	9.37	9.18	8.70	8.54	70	
71	4367	264	4235	'0604	'9396	9.03	8.89	8.65	8.26	8.10	71	
72	4103	269	3968	'0655	'9345	8.58	8.43	8.16	7.83	7.67	72	
73	3834	272	3698	'0710	'9290	8.15	7.98	7.72	7.41	7.26	73	
74	3562	274	3425	'0770	'9230	7.73	7.56	7.33	7.00	6.86	74	
75	3288	275	3151	'0835	'9165	7.34	7.15	7.01	6.61	6.48	75	
76	3013	272	2877	'0905	'9095	6.96	6.76	6.69	6.24	6.11	76	
77	2741	269	2606	'0981	'9019	6.60	6.39	6.40	5.86	5.76	77	
78	2472	263	2341	'1063	'8937	6.26	6.03	6.12	5.49	5.42	78	
79	2209	255	2081	'1153	'8847	5.95	5.69	5.80	5.12	5.09	79	
80	1954	244	1832	'1250	'8750	5.66	5.37	5.51	4.75	4.78	80	
81	1710	226	1597	'1325	'8675	5.40	5.07	5.21	4.41	...	81	
82	1484	208	1380	'1405	'8595	5.14	4.78	4.93	4.09	...	82	
83	1275	190	1180	'1490	'8510	4.91	4.51	4.65	3.79	...	83	
84	1085	171	999	'1580	'8420	4.68	4.25	4.39	3.57	...	84	

Age.	1 Living.	2 Dying.	3 Living in the middle of the year.	4 Proba- bility of dying in a year.	5 Proba- bility of living a year.	6 Expec- tation of Life.	7 Farr's Healthy L. Table (Males).	8 Carlisle Table.	9 Equitable Exp. (Morgan).	10 Experi- ence Table (No. 1).	Age.
85	914	153	838	·1675	·8325	4·46	4·01	4·12	3·39	...	85
86	761	135	693	·1776	·8224	4·25	3·78	3·90	3·21	...	86
87	626	118	567	·1883	·8117	4·07	3·56	3·71	3·03	...	87
88	508	102	457	·1997	·8003	3·89	3·36	3·59	2·89	...	88
89	406	86	363	·2117	·7883	3·75	3·17	3·47	2·80	...	89
90	320	72	284	·2245	·7755	3·62	2·99	3·28	2·56	...	90
91	248	57	220	·2292	·7708	3·52	2·82	3·26	2·32	...	91
92	191	44	169	·2340	·7660	3·42	2·66	3·37	2·04	...	92
93	147	35	129	·2388	·7612	3·30	2·52	3·48	1·75	...	93
94	112	28	98	·2438	·7562	3·18	2·39	3·53	1·38	...	94
95	84	21	74	·2489	·7511	3·07	2·25	3·53	1·06	...	95
96	63	16	55	·2540	·7460	2·92	2·13	3·46	·75	...	96
97	47	12	41	·2593	·7407	2·74	2·00	3·28	·50	...	97
98	35	9	30	·2647	·7353	2·51	1·89	3·07			98
99	26	7	23	·2702	·7298	2·23	1·78	2·77			99
100	19	6	16	·2758	·7242	1·84	1·68	2·28			100
101	13	5	10	·3806	·6194	1·46	1·55	1·79			101
102	8	4	6	·5252	·4748						102
103	4	3	3	·7247	·2753						103
104	1	1	0	1·0000							104

Mr. Brown offers the following obs. regarding the results of this T. :

We are naturally led to expect, for many reasons, that the clergy as a body would enjoy a longer duration of life than the average. Your tables, from the experience of more than 100 years, not only show below the age of 50 a rate of mort. considerably less than that of "Dr. Farr's *Healthy Life Table*" [HEALTHY LIFE TABLES]; but, comparing about half the number, or 2575 entrants during the present century with the total numbers for the whole period, the mortality in that period has been considerably less at every quinquennial group of ages than for the century past. The total deaths for the whole period, 1760 to 1860, were 3122 on 106,845 years of life obs., or 2·92 per cent., and of those who entered in this century only 1137 deaths on 46,266 years of life obs., or 2·46 per cent.

In our art. ANNUITIES ON LIVES, we omitted to give a specimen of the annu. values deduced from this Clergy Mort. T. We now supply the omission.

VALUES OF ANNU. ON SINGLE LIVES AT 3 AND 5 P.C. (FIRST PAYMENT DUE).

Age.	3 per Cent.	5 per Cent.	Age.	3 per Cent.	5 per Cent.
25	22·899	17·064	65	10·075	8·879
30	21·705	16·467	70	8·347	7·512
35	20·376	15·760	75	6·767	6·207
40	18·890	14·913	80	5·474	5·101
45	17·256	13·917	85	4·509	4·257
50	15·525	12·799	90	3·808	3·632
55	13·718	11·565	95	3·363	3·239
60	11·887	10·249	97	3·094	2·998

TABLE SHOWING THE PRESENT VALUE OF £1 PAYABLE AT THE END OF THE YEAR IN WHICH A SINGLE LIFE MAY FAIL, AT 3 AND 5 P.C. INT.

Age.	3 per Cent.	5 per Cent.	Age.	3 per Cent.	5 per Cent.
25	·33304	·18743	70	·75689	·64228
30	·36781	·21586	75	·80291	·70443
35	·40653	·24952	80	·84056	·75709
40	·44981	·28986	85	·86867	·79729
45	·49740	·33729	90	·88909	·82704
50	·54781	·39052	95	·90205	·84576
55	·60045	·44928	100	·93103	·88928
60	·65378	·51195	104	·97087	·95238
65	·70655	·57719			

We do not remember that any other annu. T. has been extended to such advanced ages. Dr. Farr, in his *Healthy District Life T.*, included by way of appendix in 33rd Ann. R. of Reg.-Gen. (pub. 1872), says :—"It has been found by experience that this H. D.

Life T. expresses very accurately the actual duration of life among the clergy, and other classes of the community living under favourable circumstances." [HEALTHY DISTRICT L. TABLE.]

Mr. Wilfred A. Bowser has [1873] prepared for the *Assu. Mag.*, *Notes on the Obs. of the Rev. John Hodgson, M.A., on the Mort. of the Clergy of England and Wales, with Remarks on the T. deduced therefrom by Mr. Samuel Brown*, which it is desirable that we notice here.

Mr. Bowser points out that the orig. obs. embrace 5088 entrants, being mostly incumbents of livings; upwards of 100,000 years of life; and 3122 deaths. "The extent of the exp., combined with the fact that it extends over a century, and the careful manner in which the statistics were compiled, impart confidence to the obs. considered as an index of the value of clergy life." He has prepared the following T., showing the force of mort. among the "entrants"—that is, among the clergy entering into the positions which brought them within the scope of Mr. Hodgson's obs.—during the last, as against those of the present century:

Ages.	Force of Mortality per cent. amongst			Number of Deaths upon which the per-centages are computed.		
	Entrants last century.	Entrants this century.	All Entrants.	Entrants last century.	Entrants this century.	All Entrants.
24—29	·501	·422	·473	11	5	16
30—34	·643	·635	·639	25	17	42
35—39	·771	·620	·706	43	26	69
40—44	·942	·729	·846	63	40	103
45—49	1·209	·835	1·035	90	54	144
50—54	1·998	1·333	1·686	153	90	243
55—59	2·814	1·489	2·213	205	90	295
60—64	3·511	2·910	3·255	230	141	371
65—69	4·726	4·396	4·592	255	161	416
70—74	7·683	6·801	7·336	301	172	473
75—79	12·184	10·724	11·626	289	157	446
80—84	17·140	16·729	17·005	193	109	302
85—100	26·131	23·934	25·284	127	73	200
101—102	...	...	...	...	2	2
24—102	3·276.	2·457	2·922	1985	1137	3122

There is (says Mr. Bowser) a marked diminution in the mort. among entrants during this century, at all ages, but chiefly noticeable at the prime of life, viz. between ages 45 and 60, where the diminution amounts to about 32 p.c. Again:

Mr. Hodgson's "Numbers rated to be under obs." are arrived at in a different manner to that usually adopted, and are such that if divided into the number of deaths, the "force of mort." will be obtained, and not the "probability of dying." In constructing the accompanying tables from Mr. Hodgson's original obs., I have therefore disregarded his "Numbers rated to be under obs.," and have obtained the required number at each age by adding to the continuants from the preceding age half the entrants, and subtracting half the discontinuants otherwise than by death.

It is to be noticed that, with a view to make practical use of Mr. Hodgson's obs., Mr. Brown first reduces the *average* "force of mort." for *decennial ages* into the average "probability of dying."

Mr. Bowser considers that this mode of treatment has led to some variations from the true results, viz. has unduly increased the vitality, "especially at the older ages, to a somewhat serious extent." He has therefore computed the actual observed prob. of dying at each separate age, from the youngest to the oldest, "from which I have deduced a new mort. T., and have graduated the same by Mr. Woolhouse's method." Here is his T. of "Expectation of Life":

Age.	Original data. Unadjusted.	Original data. Adjusted by		Age.	Original data. Unadjusted.	Original data. Adjusted by	
		Mr. Woolhouse's Method.	Mr. Brown's Method.			Mr. Woolhouse's Method.	Mr. Brown's Method.
24	41·46	41·47	41·62	60	14·44	14·44	14·94
30	36·60	36·55	36·86	65	11·54	11·52	12·05
35	32·67	32·61	32·94	70	8·88	8·88	9·50
40	28·73	28·71	29·05	75	6·70	6·69	7·34
45	24·86	24·83	25·23	80	5·13	5·11	5·66
50	21·03	21·06	21·58	85	3·97	3·94	4·46
55	17·66	17·71	18·13	90	3·06	2·97	3·62

Here is his T. of Value of Annuities on Single Lives (first payment due at end of year) at 3 and 5 p.c. int.

Age.	3 Per cent.	5 Per cent.	Age.	3 Per cent.	5 Per cent.
25	21'907	16'092	70	6'925	6'180
30	20'649	15'453	75	5'285	4'804
35	19'306	14'738	80	4'045	3'735
40	17'805	13'882	85	3'091	2'891
45	16'126	12'854	90	2'244	2'118
50	14'286	11'647	95	2'259	2'130
55	12'526	10'450	97	2'204	2'107
60	10'615	9'063	100	1'071	1'041
65	8'760	7'650	103	'000	'000

Mr. Bowser considers that a comparison of these results with Mr. Brown's T. will be a sufficient justification for his having called attention to the subject.

In a paper just prepared [1873] jointly by Dr. W. H. Stone, the med. officer of the *Clergy Mutual*, and Mr. Stewart Helder, its Act., on the medical hist. of that So., the following T. of "ann. mort. p.c." is given, wherein the mort. of the clergy in the 18th and 19th centuries is deduced from Mr. Hodgson's obs., and contrasted with that of some other T. :

Ages.	"Clergy Mutual" Experience.	Hodgson's Clergy Tables. 18th century.	Hodgson's Clergy Tables. 19th century.	Carlisle Table.	Experience Table No. 2.
24—29	0'61	0'47	0'42	0'82	0'73
30—34	0'31	0'64	0'63	1'01	0'85
35—39	0'53	0'70	0'61	1'09	0'97
40—44	0'49	0'85	0'72	1'41	1'09
45—49	0'73	1'03	0'83	1'44	1'36
50—54	1'18	1'70	1'33	1'52	1'72
55—49	1'72	2'21	1'65	2'20	2'35
60—64	2'22	3'25	2'90	3'68	3'38
65—69	3'80	4'60	4'39	4'45	4'90
70—74	3'38	7'52	6'80	6'97	7'23
75—79	6'70	11'62	10'72	10'54	10'92
80—84	21'54	17'00	16'77	13'86	15'44
85—89	...	23'32	23'40	19'92	22'50
90—94	...	33'80	30'18	28'61	20'65
95—99	...	25'00	11'76	22'92	...
100	...	100'00			...

The results here again differ from those of Mr. Bowser, prob. for the reason already stated.

CLERGY MUTUAL ASSU. SO., founded in 1829, and enrolled under the Acts relating to Friendly Sos. The So. was purely mut. from the beginning, not having the aid of any proprietary cap. In view of this position of matters, the first members of the So. passed the following prudent resolution :

That the persons who have proposed to make assurances **D**—[life insurances] be admitted assurers of such assurances respectively, upon exhibiting the requisite certificate of health, and signing the proper declaration, *provided such persons so to be admitted consent to waive any claim or title to any benefit which may arise from this assu., until 90 persons shall have been admitted for assu. of the same kind.* And in the case of assurers being admitted, subject to the above provision, their first prem. shall be immediately paid. And should any assurer die, and the claim upon his or her assu. be void in consequence of the provision above, then shall the prem. which shall have been paid upon his or her assu. be returned, with int. thereupon at the rate of 5 p.c. p.a.

The required 90—the minimum number which it was considered would furnish a proper average—was soon obtained, no death having in the mean time occurred ; and of that confident little band, 14 still [30th Dec., 1872] survive. No pol. were actually issued, by reason of the above compact, until 1830.

But the So. was not to be confined to L. ins. only—it had a sickness branch, and prob. in view of the requirements of that branch, a guarantee fund of £5000 was contributed by the bishops, clergy, and other well-wishers of the So. That fund has always remained intact.

The founder of the So. was the Rev. John Hodgson, then Vicar of St. Peter's, Isle of Thanet. He has recorded the motives which led him to that step in very simple language : " Impressed as I was at that time with an idea that duration of life amongst clergymen would, upon experiment being made, be found to be longer than amongst laymen, I set myself to work to frame a scheme of assu. for the clergy and their families, based upon

such a presumption." We have already seen that he lived to verify the fact which his sagacity had prognosticated. [CLERGY, LONGEVITY OF THE.]

The scheme of the So. was orig. that of a L. ins. asso. and a friendly so. combined. It still retains some of the features incident to the last-named purpose, although they have of late years been a good deal modified. The "Rules and Regulations" thus set forth its objects :

The raising of a stock or fund by means of the joint contributions of its members for the mut. relief of each other, their wives, children, relations, or nominees, in sickness, infancy, advanced age, widowhood, and other natural states and contingencies, the occurrence of which may be calculated by way of average; and for the lawful assu. of money to be paid on the death of members to their executors, administrators, or assigns, . . . and for all such other assu. on lives, survivorships, contingencies, and events dependent on or connected with life, or otherwise, as may by law be made or effected.

The So. consists of honorary as well as assured members, but no hon. member has been admitted since 31st July, 1854. "Provision is assurable in it, by or on account of the clergy of the United Church of England and Ireland, and of the clergy of the Protestant Episcopal Church in Scotland, and their families and others, as specially provided for in the rules," of which the following is an outline :

IV. There shall be a committee of not less than 20 nor more than 30 directors for the due management of the So. ; one half to be chosen from the clergy. V. There shall be a "council of reference," without whose advice and consent certain matters provided by the rules could not be carried into effect. VI. Sets forth classes of business to be transacted, of which more hereafter. VII. Premis. paid in advance, and not due at date of death, to be returned. VIII. The directors may purchase any ins. granted by the So. The series of rules as to sickness allowance follow; we shall speak of them later. XIX. The regulations as to foreign travel and residence are strict; but directors have power to relax them. Then follow rules as to "nomination policies." XXI. Relates to endowments and annu. XXV. Relates to fines for non-payment of premis. XXVII. relates to "Guarantee Fund Account." XXVIII. All the funds to be liable for assurances of the So. XXIX. As to investment of cap. XXX. As to audit of accounts. XXXI. Ascertainment and appropriation of surplus, quinquennially, by actuary or consulting act. XXXII. All alterations in rates to be sanctioned by actuary. XXXIII. Rules may be altered. XXXIV. Arbitration. XXXV. to XLI. Management, meetings, etc. XLII. "Council of Reference" :

The Council of Reference consists of the Archbishops of Canterbury and York for the time being, and the Bishops of Lond., Durham, and Winchester, for the time being. All matters to be referred to the Council of Reference shall be referred by memorial, signed by the chairman and not less than four directors assembled at a special meeting; and such memorial, with copies thereof for each member of the Council, shall be laid before the Archbishop of Canterbury, and his Grace shall be humbly requested to obtain the opinions of the Council upon the matters referred to them. And in every such matter the opinion of the majority of the members of the Council, expressed in writing, and signed by such majority, shall be conclusive.

XLIII. All the property of the So. shall be invested in the names of trustees. XLIV. Treasurers. XLV. Actuary. "He shall also undertake all such matters and bus. in relation to the financial affairs of the So. or otherwise, as the Board of Directors shall from time to time direct." XLVI. Auditors. XLVII. Secretary. XLVIII. "Local Agents."

Local secretaries and agents, or local boards with local sec. and agents attached to them, may be appointed with the sanction of the Board of Directors, one or more in each diocese of England and W., with such powers and authority as may be delegated to them by the Board of Directors, suitable to the convenience of assured members, and the general interests and safety of the whole So., according to its rules and regulations.

XLIX. Directors to regulate admission of members. L. Forfeiture of ins. The remainder of the rules chiefly relate to special departments of the bus. LXIX. After 10th Oct., 1853, the So. to pay for all stamps on pol.

In the life branch, sums are ins. up to £7500 on any one life, but this limit is of course very much beyond that orig. fixed. Short-term and joint-life ins. are also granted. There is no non-par. scale. The children's endowment tables are conveniently arranged. Deferred and temporary annuities are granted under a variety of arrangements, calculated to suit the circumstances of the clergy. Rules applicable to each of these branches of bus. exist in great detail. Thus as to annu., Rule XXII. :

Whatever provision may be assured to a clergyman by way of annu., whether as an assurer on his own account, or as a nominee, shall be transferable to his wife at any time within six months after the day of his marriage, with the consent of all interested parties. But no such transfer shall be allowed unless upon a proper adjustment of the terms of the assu., according to the tables of the So., in proportion to the difference of age between the wife and husband. A satisfactory medical certificate of the husband's health at the time of trans. must be exhibited, and a sum of £5, or the amount of one year's prem., paid to the So. XXIV. No premium by way of annu., greater than £104, shall be assu., so as to be capable of being due at the same time upon the same life. . . .

No immediate annu. are granted. The So. has a scheme of "EDUCATIONAL ANNUITIES," which we shall speak of under that head. [EDUCATIONAL ANNU.]

Regarding sickness, the So. had orig. several classes; but these have gradually been reduced to one, viz. : A provision of £26 p. a., or proportionably per week, or any

multiple thereof not exceeding £104, to be due in the contingency of sickness from the day of the date of the assu. until the day when the assurer shall be 70 years of age. Rule IX. provides :

Sickness on account of which provision shall be due, shall be such, whether mental or bodily, as to incapacitate a clergyman from officiating in the public services of the Church ; and whenever reference is made to sickness in any of the rules and regulations of the So., sickness as above defined is to be understood.

Rule X. says provision in sickness shall begin to be due when sickness shall have continued during a preliminary term of six successive weeks ; and the 7th week of sickness shall be the first week on account of which provision shall be due, and it shall then be due weekly during the continuance of sickness. But there are the following additional regulations :

- 1. If during the preliminary term of sickness, provided it be after the 2nd week thereof, sickness shall discontinue for any one or two weeks, but not more, and then be renewed, the succession of weeks shall not be interrupted thereby, only the week or weeks when sickness shall have discontinued shall not be reckoned in the number of six weeks to be completed before allowance shall be due.
- 2. No claim for provision shall be allowed which may occur within 18 months of the day of the date of the assu., unless the amount of one year's prem. shall have been paid at the time of making the assu., in add. to the first prem.

Rule XXXII. provides :

It shall be lawful for the Board to reduce the preliminary term of sickness to four weeks instead of six weeks, if such alteration be approved by the actuary or consulting act. of the So., and to lessen the amount of the add. prem. fee, or the term during which provision is to be withheld in case of non-payment thereof, as in Rule X.

Rule XIV. provides that provision in sickness shall not be due to an assurer [the insured] whilst residing out of the limits of the U.K., or when refusing any request of the directors to be seen by a physician or surgeon, and to answer him such reasonable questions concerning his sickness as it may be thought proper to ask him, or upon occasions stated in the pol. of ins., to which intending insurers are referred. "But should any member be advised to leave the kingdom on account of sickness, it shall be lawful for the board of directors to dispense with the restrictions of this rule in his case, so that the provision, or any part thereof, otherwise due to him during sickness, may be paid upon full and sufficient testimony being given of his continued incapacity by reason of sickness." And Rule XV. contains the following :

If at any time it shall be certified by the actuary or consulting act. of the So., that in his opinion the Fund AA alone, and unaided by any other fund of the So., is insufficient, or likely to prove insufficient, to pay the whole amount of provision in sickness which may from time to time become payable under assurances AA, the board of directors, at a special meeting, shall have power to reduce the orig. amount of provision in sickness payable upon assurances AA, in all cases then existing and afterwards to arise, where the whole amount orig. ins. shall have been paid for 78 weeks of sickness, whether such weeks of sickness shall have been in succession, or at intervals of any extent, and whether before or after, or partly before and partly after the power of making such reduction shall have been exercised ; and if any reduction so made shall afterwards be certified by the act. or consulting act. of the So. to be in his opinion insufficient, then the board, at a special meeting, shall have power from time to time to make any further reduction or reductions : provided always, that no such reduction or reductions as aforesaid shall be so made as that the amount orig. assured shall be reduced more than one-half.

The same rule gives power for further adjustments as to the sick allowance.

Rule LI. provides that if any assurer [insured] shall be sick, and his sickness be found to have been occasioned by any act of gross immorality, or if any such assurer shall defraud, or attempt to defraud the So., by any false representation in relation to his incapacity to officiate in the services of the Church, or shall notoriously offend against the sacred character of his profession, his sickness assu. shall in any of such cases become null and void, and the provision assured thereby forfeited.

None can be admitted into the sickness branch but clergymen of the United Church of England and Ireland. The rates have had to be increased on two occasions, viz. on 28th Feb., 1850, and on 13th Feb., 1872. The scale now in force is the following :

ANN. PREMS. FOR £104 P. A. DURING SICKNESS, UP TO AGE 70.

Age next Birthday.	Ann. Prem. up to age 70.	Age next Birthday.	Ann. Prem. up to age 70.	Age next Birthday.	Ann. Prem. up to age 70.	Age next Birthday.	Ann. Prem. up to age 70.
	£ s. d.		£ s. d.		£ s. d.		£ s. d.
24	3 17 3	32	4 19 7	40	6 13 4	48	8 19 6
25	3 19 6	33	5 3 2	41	6 18 3	49	9 6 4
26	4 1 11	34	5 6 11	42	7 3 6	50	9 13 6
27	4 4 5	35	5 10 11	43	7 8 11	51	10 0 11
28	4 7 2	36	5 15 1	44	7 14 7	52	10 8 8
29	4 10 0	37	5 19 5	45	8 0 5	53	10 16 8
30	4 13 0	38	6 3 10	46	8 6 6	54	11 5 0
31	4 16 2	39	6 8 6	47	8 12 11	55	11 13 8

If it should occur to any one that the conditions and regulations with which this branch of the bus. is surrounded be too severe, a very short experience would convince him to the contrary. [HEALTH INS.] [SICKNESS INS.] Indeed, we observe in the report by the actuary, on the last quinquennial investigation, issued Jan., 1872, the following :

This branch of the So.'s bus., owing to the lengthened sickness of some of the members, has not proved remunerative, and I am now, at the request of the directors, preparing a new T. of prems., from obs. based, as far as circumstances will admit, upon the actual sickness which has prevailed among the members assured under this class from the commencement of the So. [This is the T. just given.]

The bal. to the credit of the Sickness Fund has been steadily decreasing, but by Rule XXXI. the directors have power to place to the sickness account the profits of the endowment branch ; hence, from the last bonus fund (1871) had to be deducted the sum of £6261 3s. 1d.—“the difference between the liability under 162 *Sickness* assu. pol., estimated at £7389 15s. 10d., and the amount of the fund, viz. £1578 12s. 9d.” The profits of the endowment branch have, however, been greater than any demand made by the sickness branch at present ; and so the life pol.-holders have been adequately indemnified.

The progress of this So. in its earlier stages was anything but rapid. Indeed, having no proprietary cap. to fall back upon, extreme caution was almost a necessity of the situation. Yet, upon the small foundation so laid, results little short of marvellous have been realized. These will be shown in a T. at the close of this art. The first investigation of surplus took place in 1836.

As and from 15th Aug., 1850, some modification was made regarding the issue of “nominee pol.” ; but we shall have to notice this subject more particularly hereafter.

The So. completed the 22nd year of its operations on 31st May, 1851. Its report then stated :

The prosperous working of the So. has been greatly facilitated by new provisions introduced into the rules of the So. in Dec. last, under sanction of 13 & 14 Vict. c. 116. Many members have been accommodated with loans on the security of the value of their pol. The privilege of effecting assu. upon life in the So., hitherto confined to clergymen, and the wives, widows, and relatives of clergymen, has been extended to the relatives of wives of clergymen.

In the report upon the investigation of that year it was stated :

A large surplus cap. was found existing in the life branch, to be dealt with as bonus under Rule XXXI. ; and under the direction, and with the certified sanction of Mr. Ansell, such surplus cap. was appropriated to the reduction of the ann. prems., payable upon the then existing life assu. . . . The amount of bonus then appropriated was £79,485. The amount of ann. prem. extinguished by such bonus was £6290. The total amount of ann. prem. payable after such extinction by bonus on 1st June, 1851, was £44,468. . . . In 18 cases of life assu., where there was no ann. prem. remaining to be paid upon pol., add. were made to the cap. sums ins. by such pol. ; the total amount of such add. was £1398. . . . The number of deaths of members holding life assu. in the interval of five years between the bonus of 1846 and the bonus of 1851 was 49 ; and the amount paid to claimants upon the assu. held by such 49 members was £54,949 9s. 9d.

These claims were remarkably low, not amounting to $\frac{1}{4}$ p.c. p.a., upon the sum ins. This low mort. has been the main source of the bonus power of the So.

In 1854 a somewhat important constitutional change came over this So. We have seen that it was orig. regis. under the Friendly Sos. Acts. These Acts presented many advantages, such as exemption from stamp duties ; special facilities for settlement of disputes ; but more particularly gave the power of issuing what were known as “nomination pol.” [NOMINATION POLICIES.] Hence several L. offices had been induced to regis. under them. But against these advantages, various disadvantages arose, among which were more particularly, (1) restrictions as to investment of funds ; (2) constant changes in the F. Sos. Acts ; and (3) the jealousy of other offices, who, not being able to avail themselves of these Acts, took every opportunity of endeavouring to curtail the advantages they at one time offered. At length the five L. offices mainly interested, of which the *Clergy Mut.* was one, took steps to obtain a legislative measure which should place them out of reach of F. Sos. legislation, and estab. them upon the basis of their existing rules ; giving them also power to extend these as circumstances might require. The measure was adopted by the House, and took form as the 17 & 18 Vict. c. 56, known as “The Friendly Sos. Discharge Act, 1854.” Any so. issuing L. pol. for sums exceeding £1000 payable at death was to cease to be a friendly so., and was not to be affected by any Act thereafter passed relating to F. sos. The particular provisions of this measure will be given more at large under FRIENDLY SOS.

Since 31st July, 1854, all L. pol. issued by the So. have been made payable to executors, administrators, or assigns, in the usual manner. As to endowment and annuity pol., it is still provided by Rule XXI. :

Any person being a clergyman, or the wife, widow, or child of a clergyman, may make any assu. for a provision, as above, upon his or her own account ; and any person may make an assu. for a provision, as above, for the benefit of a nominee, being a clergyman, or the wife, widow, or child of a clergyman, upon whose life the assu. is to depend, and by whose age the prem. is to be taken, and to whom, or to whose proper guardians on his or her account, if under age, the provision when due upon any such assu. shall be paid.

At the bonus division of 1856, the progressive rate of former divisions was not maintained. The cause for this was explained to the pol.-holders as follows :

Here then the directors have to signify to the assured members, that the reduced rate of the bonus

on the present occasion is solely attributable to a measure which has been deemed necessary with reference to the prob. affecting the money market. Hitherto, viz. in 1836, 1841, 1846, and 1851, the calculations according to which the greater or lesser amount of bonus is regulated, were based upon the supposition that the rate of int. procurable upon the cap. [funds] of the So. would, *through all time of its contracts existing*, be not less than $3\frac{1}{2}$ p.c. p.a., a supposition warranted by the rate then obtainable with Gov. security. On the present occasion the actuary appointed by the So. has strongly recommended the directors to adopt at once the precautionary measure of calculating the bonus of 1856 upon the supposition that int. of money will not uniformly exceed 3 p.c. p.a.

The adoption of this advice of the So.'s actuary is the cause, and the only cause, for the reduction apparent in the present bonus. It is the effect of a general rectification which prudence dictates. Had the calculations been made on the present occasion upon the estimate of int. being $3\frac{1}{2}$ p.c. p.a., as on previous occasions, the bonus of 1856 would, as respects policies which participated in former surpluses, have been an increasing one as heretofore. And, if all things remain as at present, the bonus of 1861, and every successive one, will effect a larger and larger reduction of ann. prems.

It has been a characteristic feature in the management of this So. that the members have always had clear and explicit information upon all points affecting their interests.

The favourable mort. experienced by the So. was shown in a remarkable degree in the year ending 1868. The mort. indicated by the *Carlisle* T. was 105 lives; and by *Hodgson's* T. 90; whereas the actual mort. was limited to 63 deaths.

Mr. Hodgson died in 1870, full of years and honours. Mr. Stewart Helder is his able successor. Mr. Matthew Hodgson [grandson of the founder] is Sec.

From the statement of accounts and schedules made up in conformity with the Life Assu. Cos. Act, 1870, to 31st May, 1871, we gather some particulars of interest. For instance, in add. to the life pol. then in force as shown by the T. hereafter given, there were also in force 172 endowment pol., ins. £43,900, and yielding in prems. £2063. There were also in force 124 annuity pol., the ann. prems. on which were £754; and the ann. payments in respect of which amounted to £4976. "The extra prems. consist of . . . together £452 5s. for residence or travel beyond the limits permitted by the So., and are for the most part of short duration; and of £350 16s. 3d. for assu. upon lives which are considered not to be fully up to the average standard. Both sums are entirely excluded from the valuation of prems. receivable. Regarding the "valuation of pol." and "distribution of profits," the following details are given:

The principles to be adopted in the valuation and in the distribution of profits are, by the 31st rule of the So., fixed by the board of directors acting under the advice of the act. or con. act., and approved by the council of reference. Each pol. is valued separately. Pol. for the whole of life are valued by a prepared T. at the ages of entry for the number of years and months they have been in force. Reductions made in the prems., and additions made to the sums assured by previous bonuses, are valued at the ages attained by the members at the date of the valuation.

The profits are distributed amongst the members entitled to participate in the following proportion: (a.) *As regards policies which were in force at the date of the last valuation.* The difference between the ann. prems. which would be charged by the So. at the ages attained at the date of the last valuation, accumulated for five years at 3 p. c. compound int., and the sums that would be reserved at the same rate of int. and for the same period as the liabilities of such assu. (b.) *As regards policies which were effected since the date of the last valuation.* The difference between the number of ann. prems. paid accumulated at 3 p.c. compound int., and the sums reserved at the same rate of int. as the liabilities of such assu. The amounts so apportioned are either paid in cash, or appropriated to the reduction of the ann. prem., or to the increase of the sum assured, according to the option exercised by the pol.-holder at the time of making the assu.

The tables of mort. used in the valuation are:—(a.) For assu. for the whole term of life, a special T. derived from the ann. prems. charged by the So., such prems. being based upon the *Carlisle* T. of mort. with a per-centage added for expenses of management. (b.) For the other classes in which the contingency of life is involved, the *Carlisle* T. of mort.

The rate of int. assumed in the calculations is 3 p.c.

Provision is made for future expenses and profits in the amount set aside as the reserved value of the pol.; the reserve being such a sum as, with the value of the ann. prems. payable by the members, is equal to the single prems. which the So. would charge to assu. the lives of the members at their respective ages at the date of the valuation.

The So. effects no re-insurances and allows no commission.

The rate of int. realized on the L. assu. fund during the 5 years ending 1871 was as follows:—1867, £4 4s. 3d. p.c.; 1868, £4 4s. 10d.; 1869, £4 5s.; 1870, £4 4s. 10d.; 1871, £4 5s. 3d.

The Act., Mr. Stewart Helder, says, in his special report, dated Jan. 1872:

The So. continues to prosper. Since its institution it has returned to the members in bonus £839,325; it has paid for claims by death £867,786; it has on foot over 6000 pol.; the total sums assu. with bonuses are approaching £5,000,000; the ann. income, exclusive of the reductions made in the prems., is nearly £230,000; and the funds accumulating for the purpose of meeting future claims amount to £1,800,000.

In conclusion, I would remind the clergy and their families that by joining the So. they gain a profit which can be obtained in *very few other offices*, viz. the profit arising from the non-payment of any commission to agents; they gain a profit which can be obtained in *no other office*, from the low rate of mort. which prevails amongst the clergy, and which may safely be stated to be 20 p.c. less than that of the general community.

The following T. shows the growth of the So., and also all the necessary details of its financial position at each quinquennial investigation, so far as the L. department is concerned. The sickness funds are not included. It will be remembered that the ann. income of the So. is periodically very much reduced by the large application of bonuses to reduction of prem.:

Year.	New Policies issued.	Insuring.	New Prems.	Total Income.	Total Policies in force.	Total Insurances in force.	Life Assurance Trust.	Surplus Distributed.	Total Claims Paid.
1836	17	£12,200	...	£8230	172	£107,200	£31,512	£3192	£3000
1841	139	133,000	...	47,392	635	526,465	122,175	13,089	7250
1846	208	130,000	...	56,100	1353	1,241,029	254,994	39,500	32,600
1851	151	130,000	...	73,384	2030	1,827,768	482,772	79,844	93,557
1856	223	184,700	...	100,048	2802	2,536,705	709,512	74,900	218,990
1861	201	175,890	...	130,336	3652	3,185,392	1,044,176	148,300	358,051
1866	260	227,700	£...	162,157	4616	3,954,124	1,441,776	200,500	568,860
1871	426	353,345	11,728	198,314	5779	4,956,105	1,891,915	280,000	867,786

To those who understand the finance of L. ins. it is quite unnecessary to state, after perusing this T., that the So. stands second to none in Gt. Brit.

CLERGY MUTUAL ASSU. SO., MORT. EXPERIENCE OF.—In a preceding art.—CLERGY, LONGEVITY OF THE—we have made reference to the mort. experience of this So. It does not appear that the *entire experience* has ever been reduced into the form of a mort. T. The following details relate exclusively to the clergy ins. in the So.; and present some points of considerable interest as regards surrendered and lapsed pol.:

TABLE SHOWING EXPERIENCE OF THE *Clergy* MUT. ASSU. SO. FROM THE DATE OF ITS ESTAB. IN 1829, TO 1ST JUNE, 1869.

Age.	Brought from the last age.	Entered in the course of this age.	Surrendered or lapsed in the course of this age.	Died in the course of this age.	Number under observation at this age.		Number remaining on 1 June, 1869, at this age.	Passed over to next age.
24	0	136	0	0	82	9	3	133
25	133	136	4	2	194	1	13	250
26	250	139	3	0	314	1	15	371
27	371	172	14	5	440	8	18	506
28	506	227	9	5	602	9	17	702
29	702	206	4	3	800	9	36	865
30	865	248	11	2	971	7	31	1069
31	1069	222	15	3	1155	5	36	1237
32	1237	244	17	7	1328	0	46	1411
33	1411	280	14	5	1523	6	40	1632
34	1632	245	20	4	1725	5	51	1802
35	1802	235	20	6	1872	10	84	1927
36	1927	209	27	14	1974	9	78	2017
37	2017	241	11	11	2088	7	101	2135
38	2135	224	22	12	2181	0	121	2204
39	2204	224	15	12	2260	9	99	2302
40	2302	218	20	16	2347	11	89	2395
41	2395	185	19	12	2413	5	122	2427
42	2427	179	22	17	2434	10	143	2424
43	2424	177	12	8	2446	7	124	2457
44	2457	162	18	7	2478	0	118	2476
45	2476	148	16	14	2481	2	117	2477
46	2477	117	25	17	2444	4	145	2407
47	2407	115	23	23	2382	6	133	2343
48	2343	96	12	18	2306	3	145	2264
49	2264	107	14	15	2222	6	160	2182
50	2182	90	14	14	2132	5	151	2093
51	2093	87	14	21	2056	6	144	2001
52	2001	61	12	22	1965	1	113	1915
53	1915	74	15	28	1866	6	132	1814
54	1814	51	7	31	1762	4	120	1707
55	1707	53	20	16	1655	6	118	1606
56	1606	37	12	45	1537	2	124	1462
57	1462	37	3	30	1404	0	121	1345
58	1345	23	4	15	1311	8	74	1275
59	1275	28	3	17	1227	7	95	1188
60	1188	13	8	22	1130	9	90	1081
61	1081	9	2	21	1019	5	112	955
62	955	10	3	21	902	2	93	848
63	848	14	2	19	797	3	92	749
64	749	11	6	18	700	1	86	650
65	650	3	1	22	610	1	61	569
66	569	1	3	17	523	3	72	478

Age.	Brought from the last age.	Entered in the course of this age.	Surrendered or lapsed in the course of the age.	Died in the course of this age.	Number under observation at this age.		Number remaining on 1 June, 1869, at this age.	Passed over to next age.
67	478	4	2	14	443	0	57	409
68	409	3	0	15	374	2	52	345
69	345	2	0	18	312	10	49	280
70	280	1	0	5	264	3	27	249
71	249	2	0	8	225	5	40	203
72	203	1	0	5	188	2	23	176
73	176	1	0	7	163	9	20	150
74	150	1	0	8	132	5	24	119
75	119	0	0	7	106	0	19	93
76	93	0	0	6	84	9	9	78
77	78	0	0	7	66	7	15	56
78	56	0	1	3	49	9	8	44
79	44	0	0	0	36	6	15	29
80	29	0	0	7	22	6	5	17
81	17	0	0	1	15	5	2	14
82	14	0	0	1	12	10	1	12
83	12	0	0	2	8	0	6	4
84	4	0	0	2	2	10	1	1
85	1	0	0	0	1	0	0	1
86	1	0	0	0	1	0	0	1
87	1	0	0	0	1	0	0	1
88	1	0	0	1	0	6	0	0

The following is a re-arrangement of the data of the preceding T. into a form suitable for exhibiting comparative results :

1 Age.	2 Entrance into <i>Clergy</i> Mut. at ages in col. 1.	3 Lives under obs. at ages in col. 1. [Years of life.]	4 Deaths in <i>Clergy</i> Mut. at ages in col. 1.	5 Deaths which ought to have taken place in <i>Clergy</i> Mut. according to Experience T. No. 2.
24—29	1016	2,435·1	15	17
30—34	1239	6,703·9	21	57
35—39	1133	10,377·9	55	100
40—44	921	12,120·7	60	132
45—49	583	11,836·7	87	161
50—54	363	9,782·8	116	168
55—59	178	7,135·9	123	167
60—64	57	4,549·6	101	153
65—69	13	2,263·3	86	111
70—74	6	974·0	33	70
75—79	—	343·6	23	37
80—84	—	65·1	14	10
	5509	68,588·6	734	1183

The annexed table shows the ann. percentage of mort. experienced by this So., as contrasted with that of the *Carlisle* T., and that of *Experience* T. No. 2 : we number the cols. consecutive to those of the preceding T., for the purposes of the explanations which follow :

The Rep. of the directors for 1869 contained the following remarks concerning the results of the preceding tables :

Had deaths occurred in the *Clergy* Mut. Assu. So., since the date of its estab. in 1829, according to the rate of mort. experienced by the 20 assu. cos., the number of deaths would have been 1183 instead of 734; showing a difference of no less than 449 in favour of the *Clergy* Mut.; and consequently, by reason of a longer duration of life amongst the members of this clergy class so., a saving of £395,120 in excess of what would have been saved in the 20 L. assu. offices had the number of lives under obs. been the same as those stated in column 3 of the Table, the amount of each pol. being taken at an

ANNUAL MORT. PER CENT.

Ages.	6 Experi- ence T. No. 2.	7 Clergy Mutual.	8 Carlisle Table.
24—29	·73	·61	·82
30—34	·85	·31	1·01
35—39	·97	·53	1·09
40—44	1·09	·49	1·41
45—49	1·36	·73	1·44
50—54	1·72	1·18	1·52
55—59	2·35	1·72	2·20
60—64	3·38	2·22	3·68
65—69	4·90	3·80	4·45
70—74	7·23	3·38	6·97
75—79	10·92	6·70	10·54
80—84	15·44	21·54	13·86

average of £880. This saving has been distributed quinquennially amongst members during 40 years as part of their bonus.

To put this most important fact of the lesser mort. amongst the clergy than amongst ordinary assured members in the clearest light, . . . the case may be stated in the following manner. Let the number of lives in col. 3 be taken as being 10,000 at each age, then, where in col. 6 the number of deaths in one year would be 73, in col. 7 it would be 61; where 85 it would be 31; where 97 it would be 53; and so on at following ages. Should it be supposed that this much lower rate of mort. in the *Clergy Mut.* may have arisen from a more than ordinary scrupulous care in the admission of members, it is to be remarked that for several years past not more than 17 proposals for L. assu. have been declined in any one year; or, should it be supposed that it may have been occasioned by the So. having been on foot during a term of 40 years only, it is to be observed that *nine* out of the 20 offices whose combined experience is pub. by the Inst. of Act. have not been on foot so long.

It is material to notice also the following two points, viz. that the average duration of pol. taken out in this So. of clergymen during 40 years was 12½ years,—5509 pol. having been under obs. as risks during an aggregate of 68,588 years,—whereas the average duration of the lives under obs. in the 20 offices was only *nine* years; and also that out of 734 deaths of clergymen in this So. *more than one-third of them took place after 60 years of age.*

There has just been prepared [1873], jointly by Dr. W. H. Stone, the medical officer of this So., and by Mr. Stewart Helder, a paper, *On Some Points in the Medical Hist. of the Clergy Mut. Assu. So.* From this we draw some facts supplemental to the preceding, and of equal interest. The authors say:

It was from the first obvious to both of us that the mere record of deaths and causes of deaths for each year, or for any stated period of years, would be worthless, if not misleading, unless closely collated with the number of insured members at each such period. This necessarily involves a work of great labour, which we hope in time to accomplish. But for the present we propose to give a general preliminary sketch of prominent points in the early history and mort. of the So., reserving for a later communication the details above referred to.

They then proceed:

It should, however, be observed that the business of the office is not limited exclusively to clergymen; their near relations, male and female, and also their wives and the near relations of their wives, being eligible. But the number of females and laymen thus admitted is proportionally small, and hardly sufficient to justify separate tabulation. *In each case the deaths are not much above 50 on a total of over 1000.*

Of the first 90 L. pol. issued by the So., we are told, 65 have become claims; 6 have been purchased; 5 have been forfeited by non-payment of prem.; and 14 are in existence at the present time.

It is worthy of remark that out of these 90 pol. three deaths only occurred in the first 10 years, when by the *Carlisle T.*, 11 might have been expected; and 11 deaths in the next succeeding 10 years, when by the same T. 12 might have been expected, making in all 14 deaths in the first 20 years against an expect. in the same period of 23. It is also worthy of notice that out of the 65 deaths 10 took place over the age of 80, 26 over the age of 70, and 45 over that of 60. Altogether the average age at entry of the 65 pol. which have become claims was 38½, and the average age at death 66, *making the average duration of each pol. 27½ years.* The total amounts originally assured were £38,800, and the ann. prems. payable thereon £1211 16s. 11d.

The average age at entry of the 14 pol. still in existence was 33½, and the average present age 76, making the average duration of each pol. 42½ years; the average duration of the *surrendered* pol. was 8 years, and of the *forfeited* pol. nearly 2 years.

There is then given a T. following out in detail the causes of death of those who have died of the first 90 policy-holders. Then a T. showing the deaths during the first 20 years of the So.'s existence. These (*mirabile dictu*) were only 68 in all—65 males, 3 females. The following T. shows the causes of death in order of frequency:

Phthisis 16	Diabetes 1
Cerebral 15	Climacteric 1
Digestive system 9	Spinal 1
Lung diseases, other than phthisis 7	Renal 1
Fevers 5	Uterine 1
Cardiac disease 2	Sudden death 1
Accident (drowning) 2	Unknown 2
Abscess 2	
Suicide 1	
Erysipelas 1	
	<hr/> 68 <hr/>

The writers remark:

This cannot be considered other than a favourable rate of mort.; especially does the remarkable scarcity of deaths in the early years bear evidence to the care employed in selecting the first lives; and also to the *practicability, without elaborate papers of questions, of forming a generally correct estimate as to the value of individual proposals.* The first ten years only give a result of one death in two years; and it is not until 1840 that the ann. death-rate mounts to the moderate figure of four. It remains within the decade until 1847, and the first 20 years only give an ann. rate of between three and four deaths.

The medical questions at this date were singularly simple, five in number, asking respectively as to—1. Smallpox. 2. Gout. 3. "Asthma, fits, or any disorder which tends to shorten life." 4. "Violent inflammatory attacks, or spitting of blood." 5. General good health. Some modern offices, which occupy four folio sheets with various medical queries and certificates, would probably stand aghast at this reticence. But it seems to have been more than sufficient for protection; aided, doubtless, by a certain mutual intimacy of assurers and assured, and much also by the highly accurate and conscientious tone of the replies.

It is also remarked as somewhat singular that in a constituency almost entirely com-

posed of males, the first death occurring was that of a female. "Indeed, from some cause which does not seem very obvious, the proportion of female deaths during the early years was large." This death was in 1832; the 2nd death was in 1834, the 3rd in 1836.

Here is a T. of the earliest deaths after completion of ins. :

The only diseases which occur twice are fever and phthisis; "for under this heading no doubt the vague return of induration of the lungs should be classified." Again we are told, "On examining the diseases to which death was due, we find even more than the usual large predominance of phthisis, to which 16 are attributed. If we add the number 7, due to other lung affections, the total

Duration of pol.		Age at Death.		Cause of Death.
Years	Mos.	Years	Mos.	
0	1	42	10	Fever.
0	4	36	10	Cynanche.
0	6	53	7	Apoplexy.
0	7	39	7	Fever.
0	10	45	10	Inflammation of bowels.
0	10	48	9	"Induration of lungs" (Phthisis).
1	0	50	11	Uterine.
1	0	30	5	Consumption.

of 23 represents a fraction more than one-third of all the deaths." [CONSUMPTION.]

Then the following :

The 15 cerebral cases give a total of 120 years four months of life, which furnishes an average of 8 years for each life. It is prob. that the number here tabulated is hardly sufficient to give a fair estimate, and that the whole mort. of the So. for brain diseases will prove much more favourable. Certain forms, indeed, seem a natural termination of aged lives, and therefore figure more in the later statistics.

The deaths from diseases of the digestive system are too few for numerical analysis, and are chiefly remarkable as consisting of what may be termed adventitious disorders rather than any of the principal morbid processes in this department. There are 3 hepatic, two malignant cases, and one of cynanche. Fevers give a total of 5 cases, one being remittent. Cardiac disease gives the remarkably low number of two, abscesses, accidents, and unknown causes of death being of similar amount. Other diseases appear singly or are entirely absent. With regard to this latter point it is worth notice that so common a complaint as bronchitis only appears once on the T., and that gout, hernia, and renal affections are absolutely unrepresented.

We are promised a "future communication" from the same gentlemen, which we shall look forward to with much interest.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSU. SO., founded in 1824, with an authorized cap. of £500,000, in 5000 shares of £100 each, on which there was paid up £2 10s.; but this last-named sum has been increased by bonus add. £7 10s., so that the paid-up cap. now stands at £10 p. share.

The first document issued by the promoters was: "Prosp. for the Estab. of a new Assu. Office, with improved arrangements." A copy before us bears date April, 1824, and says:

Amidst the great and valuable estab. of this country, there are none more extensively conducive to the interests of the public, and the benefits of individuals, than well-conducted L. assu. offices. The increase of sos. of this kind, during some years past, stands in proof of this fact; and instead of evincing that a sufficient number of such inst. already exists, it shows that their utility is more justly appreciated, in proportion as the advantages of this mode of securing property are more generally understood. The system is still in its infancy. From the want of an accurate knowledge of its benefits, and of the ready method by which they are attainable, the assu. of lives has hitherto been very limited. When its principle shall be fully comprehended, it may be presumed that its manifold advantages will cause it to be more generally adopted. . . .

The very important truth cannot be too widely disseminated—it ought to be distinctly known in every family, and to every member of society, that by the yearly payment of a moderate saving, persons may secure to their wives, their children, their helpless relatives, or their friends, an adequate provision against the pecuniary distress which might be produced by their death. To the *Clergy*, who hold their preferment for the term of their lives; to the members of the *Medical* profession, whose incomes depend in a great measure upon their powers of healthy exertion; and to all persons possessing only a life int. in their property, the practice of L. assu. recommends itself not merely as a matter of expediency, but as a bounden duty. In case of marriage settlement, L. assu. may often be particularly advantageous. . . .

The promoters proceed to say, that it is presumed that the advantages of L. assu. may be extended more effectively to the public at large, and in a more especial manner to the respective classes above mentioned, by constituting a new assu. co., to be called, *The Medical, Clerical, and General Life Assu. So.*

The principles on which the So. will be conducted are the same as those of other similar inst., with only such add. and improvements as, it is presumed, will augment its general utility. The *Medical, Clerical, and General Assu. So.* does not stand forward in the character of a rival inst.—seeking success by derogating from the merits of its contemporaries; it presents itself as an associate, engaged in the united and laudable endeavour to diffuse more widely the great benefits which may accrue to various classes of society from this most valuable mode of securing property.

The proposed cap. was to be one million [afterwards wisely limited to one-half that sum], and the shareholders were to receive int. "at not less than 3, nor exceeding 5 p.c. p.a., on the sums actually advanced," and a proportion of profits. The inst. was to be placed under the direction of a body of gentlemen, "whose characters and property will be a guarantee for the integrity of its proceedings." "Its practice will be liberal and comprehensive." We now reach the "special feature" of the Co., as orig. conceived:

The common usage of excluding from the benefit of L. assu., or exposing to a forfeiture of their

pol., individuals who may have been afflicted with "gout, asthma, fits, rupture, hæmorrhage, complaints of the liver, spitting of blood, vertigo, or any other disease," being in many cases a source of fraud on the one hand and of litigation on the other, it is expedient that some method should be devised for guarding against the evils of such an inefficient regulation. Medical practitioners, in extensive employment, cannot fail to know, that at the several offices where these exemptions form a part of their rules, persons afflicted with gout, asthma, rupture, and the other complaints commonly specified, do, notwithstanding, obtain pol.; and upon such terms as would only be granted upon healthy lives. These persons necessarily incur the risk of forfeiture, and leave their successors exposed to great hazard in the event of their claims being litigated.

Yet in such cases circumstances may occur which may render it extremely disadvantageous to individuals to be entirely excluded from the benefit of L. assu. In order, therefore, to meet the public convenience in a fair and impartial manner, and to remove every pretence for deceit and fraudulent concealment respecting the actual state of the health of the assured, *this So. proposes to extend the advantages of L. assu. to persons subject to such deviations from the common standard of health as do not essentially tend to shorten life*, upon their acceding to the following conditions:—1. That they make an affidavit stating the nature of their complaints, the dates of their first attacks, and the names and addresses of the medical practitioners who attended them then, or in any subsequent returns of their disorders. 2. That they pay an increased prem. proportioned to the increase of hazard.

The premium on the lives of persons *deviating from the common standard of health* will be regulated according to the amount of hazard; the risk being calculated upon a minute investigation of each individual case by the board of directors. The prem. on *healthy lives* will be regulated according to the rate fixed by the T. calculated for this inst.

The management of the So.'s affairs will be vested in a board of 18 directors, of whom 3 will be *dignitaries of the Church*, and directors *ex-officio*. Of the remaining 15 directors, not less than 9 will be members of the *medical profession*. The attendance of such a body of eminent medical practitioners, on every occasion of granting an assu., will afford the most effectual means of ascertaining the actual state of health of the assured; and will form a distinguishing safeguard, which, it is presumed, will greatly conduce to the permanent prosperity of this So.

It was stated that the bus. of the Co. would commence as soon as "1500 shares shall be subs. for," due notice of which would be given in the public newspapers. Bus. was commenced on 23rd June, 1824.

The Co. in its more mature form presented a most powerful cast of office-bearers and directors. The Marquis of Huntly was President; while among the vice-presidents were two bishops, four lords, and numerous baronets and M.P.s. The chairman of the board was George Pinckard, M.D.,—the actual founder of the inst.; while among the directors were many of the leading members of the medical profession at the period. The "Hon. Director or Visitor" was the Venerable the Archdeacon of Lond. There was also a board of "Provisional Directors for the County of Buckingham." The leading points in the former prosp. were adopted. . . . Attendance was to be given daily, "Sundays excepted," at the office, 32, Gt. Russell-st., Bloomsbury, from 10 till 4.

The "peculiar features" of the Co. were declared to be,—1. A diminished rate of assu. [prem.] especially on the younger lives: "*calculated upon the improved state of public health and the increased duration of human life.*" 2. One-half of the board of directors being members of the medical profession. 3. Extending the benefit of L. assu. to all classes of persons; *calculating the prem. at a just ratio with the amount of hazard*, instead of excluding those afflicted with "gout, asthma, rupture," and the other diseases usually specified. 4. Giving the option to the person ins. to share the profits. 5. Purchasing the int. of the assu. whenever circumstances may chance to require it. "N.B.—Attorneys, brokers, and agents, bringing bus. to the office, will receive a liberal commission upon the payments." Among the classes of bus. undertaken was this: "9. Receiving investments of property for accumulation."

At a general meeting of the shareholders held 1st Dec., 1825, the name of the Co. was changed to that which it now bears.

The D. of Sett. of the Co. was not completed until some time after bus. operations had been commenced. It was desired to test some of the new features before they were embodied into a formal instrument. The deed was at length prepared, and bears date the 14th Feb., 1827—St. Valentine's Day. It is clearly and well drawn. We shall notice only its more special features. Proprietors holding not less than five shares may vote at gen. meetings (c. 24). Pol.-holders of two years' standing, and ins. for £500 and upwards, whole term, may vote on election of auditors, or in respect of dissolution of the Co. (c. 27). "No proprietor, except an unmarried female, or a Member of Parl., shall be entitled to appoint a proxy to vote or act for her or him at any general meeting or ballot" (c. 28). Co. not to be dissolved without previous consent of directors (c. 42). General meetings to be adjourned unless 12 proprietors be present, or if ballot be demanded (c. 43). The remuneration of the directors was orig. fixed at 8 guineas, to be divided amongst the directors in attendance at the weekly board. It is now very properly modified to 2 guineas to each director for each attendance, and 3 guineas to the chairman (c. 71). Then the following:

74. That it shall be wholly left to the board of directors to accept or refuse proposals for assu., endow. and annu. to be effected and granted by the So.; and it shall be lawful for the board of directors to accept proposals for assu. on the lives of persons who may be afflicted with such complaints as have been or may be generally considered to render their lives uninsurable: provided, nevertheless, that no proposal for any assu. or endowment to be effected by the So. shall be accepted *unless two at least of the directors present at the board shall be medical practitioners, or unless two at the least of the directors who are medical practitioners shall have previously examined the person on whose life such assu. or endow. shall be proposed to be effected, and shall have reported to the board of directors the state of the health of such person.*

The sum to be ins. on any one life was orig. limited to £3000, except under special

circumstances, when any board, at which there should be nine directors present, might extend the limit to £5000 (c. 75). The limit may now be increased by any board at which six directors are present to £10,000. Pol. to contain a declaration limiting the individual responsibility of proprietors to the amount of their shares (c. 78). Then the usual clause in the deeds of the early offices, that the payment of claims might be deferred in case of plague, famine, or invasion, "until such time as the funds in the hands of the So. shall be sufficient for the payment of all the sums to be claimed under pol. issued by the So., in respect of deaths which may so happen as aforesaid" (c. 81). Claims were orig. made payable three months after proof—they are now payable one month after (c. 82). Regarding the special branch of bus. to which we have already drawn attention :

85. That it shall be lawful for the board of directors to receive, on behalf of the So., investments of money for the purpose of accumulation, on such terms as the board shall think proper.

Two separate funds to be kept, viz. "The Proprietors' Guarantee Fund" and "The Consolidated Fund." The first to consist of the paid-up cap. and all bon. added thereto. The second to consist of all the other moneys of the Co. (c. 86). Then follow a series of clauses regarding the ascertainment and distribution of surplus; but as these have been modified under the Co.'s special Act, we shall not enter into details now. The "Proprietors' Guarantee Fund" was to be increased by bonus add. to £50,000 (c. 91). Co. may purchase its own shares, never retaining more than 100 in hand (c. 103).

109. That the So. shall always be provided with a house in Lond. or Westminster, or the environs thereof, fit and proper as to size and situation for the office of the So., and the board of directors shall provide the same. . . .

122. That it shall be lawful for the honorary director or visitor, or honorary directors or visitors, of the So., when and as he and they shall think proper, to be present at and attend the meetings of the board of directors and the general meetings of the So.; but no honorary director or visitor shall be entitled as such to vote either at the meetings of the board of directors or at the general meetings of the So.

No proprietor to hold more than 50 shares (c. 170). Directors signing pol. and other instruments not to be personally responsible to pay moneys thereunder—

Nor shall any claim upon any pol., or deed, or other instrument as aforesaid, be enforced against any person or persons assured by the So., his, her, or their executors or administrators; anything contained in these presents to be had, done, or executed by the board of directors or other officers or proprietors of the So., or by any general meeting of proprietors or otherwise, to the contrary thereof in anywise notwithstanding (c. 200).

The "Consolidated Fund" primarily liable for all engagements of the Co. "Proprietors' Guarantee Fund" only secondarily so (c. 201).

We have never met with a more clear, explicit, and carefully-drawn D. of Sett.

The founder of the Co., as we have seen, was the late Dr. Geo. Pinckard; and the scheme of its foundation was that it should undertake the ins. of lives presenting such deviations from the common standard of health as, while perhaps not essentially tending to shorten life, yet could not be insured under ordinary circumstances and at ordinary rates. The difficulty at starting was the non-existence of any data from which to deduce tables of rates at all adapted to the circumstances of the more special classes of bus. proposed to be undertaken. The founder considered that this difficulty could be best surmounted by selecting a considerable section of the board from the medical profession. The number was fixed at eight. In the selection of these medical directors, especial care was taken to secure men of eminence, distinguished by their attention to some particular class of diseases. Thus one medical man was selected who was considered particularly conversant with diseases of the lungs; another was chosen for his skill and experience in the ailments with which females are chiefly affected; and the rest on similar grounds. By this arrangement, whatever might be the complaint with which any applicant had been afflicted, there was always the chance of there being present at the board a medical director peculiarly qualified by previous study and practice to estimate the increased risk caused by the complaint in question. Results have confirmed the wisdom of this course.

It must not be supposed, because the scheme of the asso. was so skilfully laid, and its promoters were so eminently respectable, or even because it introduced a new and most important extension of the bus. of L. ins., that its progress was at all rapid, or that it escaped the ignorant prejudices which too often surround young offices. On the contrary, its progress was very slow; and by reason of its "diseased life" feature, it was often designated by jealous opponents as "the rotten office." Yet it survived all this: and is now unquestionably one of the most solid Ins. institutions of our country.

In 1828 it took over the L. connexions of the *Herts, Cambridge, and County*, which had been founded in the same year with itself (1824); and in 1829 it took over the L. bus. of the *Berkshire, Gloucestershire, and Provincial*, which had been also founded in 1824. In 1840 it took over the L. bus. of the *Leicestershire and Midland Counties*, which had been founded in 1834. The following statement of facts regarding these so-called amalg., from the pen of the Act. of the Co., appeared in the *Pall Mall Gazette* in 1869—a period when much attention was being directed to amalg. :

In neither case was there an incorporation of the interests, or a purchase of the business of the retiring office. On the contrary, in each instance we had the proper money consideration for under-

taking the risks; which were, moreover, trans. without any cost to us whatever. When I have stated that the total bus. of the three offices consisted of but 69 pol., assu. £34,100, and that the last of the trans. took place in 1840 (the others having been in 1828 and 1829 respectively), it will be manifest that the influence of these transactions on this So. has been infinitesimal, though it is but fair to say that, such as it was, it has been for good, the assurances having been profitable and the connexions valuable.

The first investigation of surplus was made in 1831, and similar investigations have been made quinquennially as follows. The distribution to the whole-term pol.-holders had been orig. fixed by the D. at "three equal sixth parts"; but this proportion was increased by the special Act of the Co. in 1850. A T. at the end of this art. will show the large amounts of surplus which have been from time to time distributed.

In the report presented to the proprietors for the year ending 30th June, 1839, special attention was drawn to the following facts :

1. That the profits realized from forfeited, lapsed, and purchased pol. during the past year has amounted to £11,042 18s. 2d. 2. That the sum received for prems. on new pol. issued during the same period was £10,040 11s. 11d. 3. That the income of the So., which is steadily and progressively increasing, now exceeds £86,600 p.a. 4. That after defraying the claims on account of deaths, and all other expenses, £52,004 have been carried, as a clear saving, to the Consolidated Fund during the 12 months embraced in the present report.

The directors desire also to state, as indicating the estimation in which this So. is held by one of the best classes of assurers, that the number of pol. granted on the lives of clergymen has been greater by 50 p.c. during the last than during any preceding year.

The first item would not *now* be brought into any prominence in the reports of the Co., even if it existed; but the more enlightened principles upon which L. ins. bus. is now conducted renders such a source of profit happily small.

The 3rd distribution of surplus took place in 1841. The reserve fund, which in 1831 had been £5000, and in 1836 only £6500, was now increased to £29,500. In 1846 the 4th distribution took place. The sum divided amounted to £154,500. The ann. income of the Co. had then reached £116,300. The reserve fund stood at £51,500. The provisions of the D. were modified in several respects by the resolutions of general meetings held in Jan., 1847, viz. the range of securities in which the funds might be invested were extended to railway securities—mortgage, bond, or debenture; but such investments could only be made at a board at which not less than five directors were present. Advances might also be made on the pol. of the Co. to the extent of nine-tenths, instead of two-thirds of their value, as provided in the D.

In 1850 the Co. obtained a special Act—13 Vict. c. ix.—*An Act for better enabling the Clerical, Medical, and General L. Assu. So. to sue and be sued; and to alter certain Provisions of their Deed of Constitution; and to give further powers to the So.* This Act received the Royal Assent 17th May, 1850. It recites the preceding D. of Constitution, and also the alterations which had been made therein, as already stated. Also, "And whereas the So. hath been very successful, and the funds thereof have been very much increased in value." The "Consolidated Fund" was said to exceed £746,657 17s. 8d.; and the "Proprietors' Guarantee Fund" amounted to £50,000.

And whereas it would be greatly for the benefit of the said So., and of the public at large, that the said So. should be able to sue and be sued in the name of the So., and should be empowered to alter the present mode of division and application of the profits of the So., and also to lay out and invest their funds in and upon other property and securities, in add. to the funds and securities in and upon which investments are directed to be made by the D. of Consti., and that certain other provisions of the D. of Consti. should be altered and further powers given to the said So.; but the several purposes aforesaid cannot be effected without the authority of Parl.: May it therefore please Your Majesty, etc.

It was enacted that all suits and proceedings on behalf of the So. be in the name of the So. (s. i.):

III. And be it enacted, that in every case where any answer, affidavit, oath of verity, or solemn declaration may be required on behalf of the So., the same shall and may be made and taken by the Act. for the time being, or any director of the So., in the name and for and on behalf of the So.; and the same being so made and taken shall to all intents and purposes whatsoever be equally valid in law as if made or taken by all the members for the time being of the So. on their own behalf.

Members may sue and be sued by the So. (s. iv.). Shareholders sued on behalf of the So. to be reimbursed (s. ix.), by contributions to be recovered from other proprietors (s. xi.). Proprietors and pol.-holders may inspect share regis. at office of So. (s. xv.). Memorial of the name of the Act., Trustees, and Directors to be enrolled in Chancery (s. xvi.). Power to directors to invest in securities other than those already named (s. xx.). So. to be deemed a co. formed for granting and purchasing annu. pursuant to 53 Geo. III. c. 141 [ANNU. ON LIVES] (s. xxi.). Power to directors to effect re-insurances (s. xxii.). Power to directors to effect "non-participation" insurances (s. xxx.). Upon division of profits in 1857, and ever after, *five-sixths* to go to assured, and one-sixth to proprietors (s. xxxi.).

XXXII. Provided always, and be it enacted, that nothing in this Act contained shall authorize the application as divisible profits in 1857, and upon every division of profits which shall afterwards take place, of any larger sum than shall remain, after leaving in the Consolidated Fund the value of £50,000 sterling over and above what may be sufficient to make provision for all the then existing claims and demands on that Fund.

Power to pay bonuses in cash, or to apply them in reducing prems. or in limiting the

periods of payment, etc. [LIFETIME POL.] (s. xxxiv.). Nothing in Act to affect powers of deed to alter provisions of D. of Sett. (s. xxxv.). Act not to incorp. So. (s. xxxvii.).

At the first general meeting after the passing of the preceding Act, it was resolved to appropriate £50,000 "as a permanent security for the proprietors and the assured, the int. of which will be ann. added to the profits of the So." This fund was in add. to the proprietors' cap.

In 1851 new scale of prems. for L. ins. was adopted; and non-parti. pol. were first issued. The days of grace were extended from 21 to 30 days. The system of "credit prems." was introduced. Claims were to be paid 30 days after proof. Limits of foreign travel and residence increased. Ins. up to £10,000 granted; and a wider range of investments adopted. The Co. was in fact "modernized." The expenses of man. at this date were stated to be 3½ p.c. on the income. Nothing had ever been lost by "bad securities" [investments]. In the quinquennium the "expected" mort. was 604 deaths—actual deaths 482. The reserve fund had become increased to £60,000, but was then permanently reduced to £50,000.

In 1851 Mr. George H. Pinckard, the then Act. of the So., read before the Inst. of Act. a paper, *The Practice and Experience of the Clerical, Medical, and General L. Assu. So., chiefly with Reference to Invalid Lives*. This paper, which is full of interest, will be spoken of under CLERICAL, MEDICAL, AND GENERAL, MORT. EXPERIENCE OF, and also under DISEASED LIFE INS.

At the general meeting in 1854 the directors recommended that alterations should be made in the D., by which pol. of twelve months' standing should not be affected in case of death by suicide, duelling, or the hands of justice. These alterations were adopted; and whole-world pol. were issued from this date. In the year ending 31st May, 1854, there were issued 605 new pol., insuring £299,508, and yielding in new prems. £10,567—the largest bus. the Co. had ever transacted in any one year, "and nearly double" the average of the three preceding years. It is a remarkable feature that this asso. did not owe its wonderful prosperity to a very large bus.

An apparent discrepancy requires a word of explanation. The asso. is called in its D. of Sett., Act, and official documents a "So." We call it a "Co.," from the fact of its being organized with a proprietary cap.

In 1856 the 6th investigation took place. The report stated, "In estimating the amount of liabilities, the net *Carlisle* T. has been adopted, and 3 p.c. has been the rate of int. used in all the calculations." The T. at the close of this art. embodies all the leading financial facts in the hist. of the Co., and it deserves careful consideration.

The general features of the Co. are liberal—especially in the matter of foreign residence and travel. Whole-world pol. are issued. Pol. of twelve months' standing are not forfeited by suicide. Surrender value given on pol. of three years' standing, commencing at a minimum of 33 p.c. of prems. paid. For purposes of surrender, pol. on diseased lives are treated as though granted at ordin. rates. Claims payable 30 days after admission.

The successive chief officers of the Co. have been, Mr. Joseph Pinckard, first Sec., succeeded by Mr. G. H. Pinckard in 1839. Mr. Cutcliffe became Act. and Sec. of the Co. in 1858; and he is now [since 1864] ably assisted by Mr. Newbatt.

The following T. embodies the leading financial features in the hist. of the Co., given at the period of each quinquennial investigation into the affairs of the Co. It seems almost superfluous to add that the Co. is in every respect first-class.

Year ending June 30.	New Pol. issued.	Insuring.	New Prems.	Total Income.	Total Pol. in force.	Total Ins. in force (excluding Bonus).	Life Assurance Fund.	Surplus distributed.	Total Claims Paid from Commencement
1831	278	£200,843	£7298	£35,635	968	£740,730	£69,147	£10,000	£19,329
1836	407	278,000	10,208	71,588	2202	1,581,725	189,187	13,000	138,921
1841	355	220,079	7759	97,932	3160	2,112,538	418,903	59,000	304,612
1846	401	227,860	7441	116,383	4122	2,599,726	639,797	103,000	507,850
1851	275	162,359	5521	136,190	4792	2,950,411	864,328	120,000	815,301
1856	597	296,100	9967	166,834	6457	3,637,687	1,154,276	195,000	1,157,599
1861	580	302,560	9891	195,406	7559	4,287,611	1,422,191	237,000	1,621,878
1866	576	375,164	12,577	215,237	8331	4,786,062	1,619,540	225,000	2,265,764
1871	430	260,013	8187	236,563	8679	5,084,255	1,826,459	270,000	2,912,245
1872	515	275,740	9851	247,111	8884	5,207,557	1,810,557	...	3,028,829

CLERICAL, MEDICAL, AND GENERAL, MORT. EXPERIENCE OF.—The circumstance of this Co. having undertaken the ins. of "impaired" lives, as already explained, naturally caused a considerable amount of interest to be manifested in its mort. experience; and whatever the degree of curiosity felt by outsiders may have been, we might take it for granted, if we did not know it as a fact, that at least a similar degree of interest was felt by the managers of the undertaking.

At the end of 1834—that is, when the Co. had been in operation for 10 years—Mr. George H. Pinckard, who was then Assistant Act., made the "best investigation which the facts at his disposal would admit, into the mortality that had prevailed as regarded both the healthy and the unhealthy lives assured up to that date." The result is shown in the following T. :

It thus appeared that the mort. on the unhealthy lives for the whole period from 20 to 69 had been more than double that on the healthy. At the same time, the average additional prem. paid by the invalid class did not exceed 30 p.c. ! The above results, although derived from the small number of 650 unhealthy lives, were nevertheless considered to militate so strongly against the acceptance of unhealthy risks, that the directors from that date exercised much greater caution than theretofore in accepting unhealthy lives,

and, as a necessary consequence, many persons who before would have been admitted were then rejected. This we are told by Mr. Pinckard.

In 1843 Mr. Pinckard made another investigation, with a view to test the results of the more cautious line of action adopted since 1834. This last investigation was brought down to June, 1843. Mr. Pinckard describes his mode of proceeding on this occasion :

First, every invalid case was regis. under the head of the particular disease on account of which an add. prem. had been charged. Thus, all persons afflicted with disease of the liver were grouped under one head ; those suffering from disease of the lungs, under another ; and so on, until all were classified under 56 different heads of disease. By the aid of the medical directors, these 56 distinct diseases were comprehended under eight classes ; each class consisting of diseases having an affinity for each other. There was also a 9th class, termed miscellaneous, embracing persons who had been charged an increased prem. on account of their occupation, or on other grounds unconnected with any specific disease.

These 9 classes were then formed into one, which exhibited in a synoptical view 1297 invalid lives, being all who had been assu. at an add. prem. (exclusive of those charged for foreign climates), from the foundation of the So. up to the year 1843. This being completed, a comparison was then made as to the per-centage of loss by deaths on the whole prems. received both from the healthy and unhealthy pol. The next step was to ascertain the rate of mort. which had occurred during the 18½ years from June, 1824, to Jan. 1843, on the diseased cases taken by themselves. This is shown by the annexed T. :

Ages.	Clerical, etc. Mortality.	Northampton Table.
20 to 29	One in 69.	One in 64.
30 to 39	79.	54.
40 to 49	53.	42.
50 to 59	37.	30.
60 to 69	19.7	21.
20 to 69	52.	42.

By a comparison of the preceding tables it will be seen that the increased care exercised during the 9 years 1834-43 produced a very beneficial effect ; the deaths on the unhealthy lives between the ages of 20 and 69 having been in the proportion of 1 in 31 in the former T., against 1 in 52 in the latter T.

These favourable results gave renewed courage to the management, and diseased lives were again accepted more freely, but only in the light of the experience gained.

In 1849 another investigation of the mort. was made, on the same principle as that of 1843. "All persons on whose lives an increased prem. had been charged have now been arranged under 79 heads, viz. 65 of different diseases, and 14 heads of miscellaneous. These have been grouped into nine classes as before, and the whole again comprehended in one synopsis : thus exhibiting the exp. of the So. for a period of 25 years, from June, 1824, to June, 1849." Mr. Pinckard says :

With respect then to the last six years, during which the system alluded to has been in operation, I have only to state that 826 pol. on invalid lives have been issued ; and that the claims by death have amounted in that period to 24.9 p.c., or in round numbers to one quarter of the whole prems. received. Whether this loss is greater or less than has been sustained by those offices which have been transacting this kind of bus. for the same period of time, I have no means of ascertaining : *but, in my judgment, the result is not otherwise than satisfactory.*

These facts were made known by Mr. Pinckard in a paper which he read before the Inst. of Act. in 1851 : *The Practice and Experience of the Clerical, Medical, and General L. Assu. So., chiefly with reference to Invalid Lives.* The paper enters more minutely into details regarding this class of risks ; but we reserve these further facts for our art. DISEASED LIVES, INS. OF.

The Co. has not pub. its more recent mort. experience in a distinct form. It was one of the offices contributing data for EXPERIENCE T. No. 2. We observe in the Rep. on the Investigation of Surplus as at June, 1871, the directors, speaking of the increasingly large sum for distribution, say :

This surplus is matter for hearty and unmixed congratulation, and justifies the preference shown by the board for a well-selected business tending to profit. It must, however, be remembered that although owing in the main to ordinary recurring causes, and to sources of profit having every prospect of permanence, it is, nevertheless, certain *that its unprecedented enlargement is due to a condition of mort. favourable beyond previous experience*, to be probably compensated under the law of averages by an increase of deaths hereafter beyond those allowed for in the calculations.

This is very fairly and honestly put.

CLERKS.—In the earlier Ins. asso., and indeed almost down to the present century, the principal officer of such associations was designated the "Clerk." The origin of the appellation is clear enough. The term, from having originally been applied to the clergy, came to signify an educated person: hence the "Clerk" was the educated person, or chief officer of such establishments. The *Lond. Assu. Corp.* and the *Equitable* were among the earliest offices that departed from the old practice. A clerk now signifies a scribe, or a writer; but the Chief Clerk in an ins. office may be regarded usually as occupying a position of great trust and confidence.

We may take this opportunity of offering a few general obs. regarding clerks in ins. offices. We are often asked the question, What are the chances of success for a young man of fair education entering an ins. office in the ordinary way, *i.e.* trusting to his merits for advancement? We are obliged to answer that the prospects are not very inviting. 1. It is a genteel employment—genteel employments are much sought after in this country. 2. It involves no outlay of capital either for special training, as nearly all professions do; or to be staked on the success of the venture, as in commerce. 3. It secures an immediate return in the shape of some small salary—this is of the greatest consequence to sons of widows and others in reduced or moderate circumstances. For these reasons the competition for such employment will always be considerable, and the scale of remuneration correspondingly low. On the other hand, there is scope here, as in other pursuits, for the exercise of ability, with the prospect of a fair reward. The clerks of this generation will be the managers, actuaries, or secretaries of the next. These are the prizes of the profession; and as all advancement *should* be, and to a great extent *must* be, by merit, there is scope for those *who determine to become proficient*. The increasing competition with ins. offices will require to be met by a higher standard of managerial ability.

CLERKS, INS. OF.—During the years 1710 and 1711, when a great number of speculative ins. projects were on foot, various schemes were brought forward for ins. Clerks. We have never seen any explanation of the exact nature of the ins. undertaken. It was no doubt analogous to the schemes for ins. apprentices and servants; for it was carried on at the same offices.

CLERKS, MERCANTILE, ETC., MORT. OF.—There would seem at first sight no especial reason why persons occupied as mercantile clerks should sustain an unusually heavy mort., yet the fact is so. It most prob. arises from several causes combined, rather than from any one well-marked and distinctive circumstance.

Thackrah, in his *Effects of Arts, Trades, and Professions, etc.*, 1832, says:

Clerks, book-keepers, accountants, etc., suffer from confined atmosphere, a fixed position, and often also from long days. At many large manufactories the book-keepers are kept at the desk, with the intervals of 2½ hours for meals, from 6.30 in the morning till 9 at night. Attorneys' clerks are sometimes confined too long and too closely; but this excess is but occasional, and on the average I believe their work is moderate. Yet they, as well as book-keepers, are often distressed. Their muscles are distressed by the maintenance of one posture; and they complain frequently of pains in the sides of the chest. This affection is not dependent on the state of the thoracic viscera, . . . neither do we find the size of the chest considerably diminished. It is less indeed than in the soldier, but scarcely less than in the average of townsmen; and the capacity of the lungs, as indicated by the pulmometer, is not at all reduced. In clerks and book-keepers the digestive organs suffer most, a fact apparent even from the countenance and tongue. The circulation is imperfect; the head becomes affected; and though urgent disease is not generally produced, yet a continuance of the employment in its full extent never fails to impair the constitution, and render the individual sickly for life. I scarcely need mention the simple and effectual remedies: fresh air, and full muscular exercise. Many of the class have the opportunity; all ought to have.

This is the medical view of the case; and it prepares the way for what follows.

In 1840 the *Provident Clerks Ins. Asso.* was founded, for the purpose of affording ins. facilities to mercantile and other clerks. Its experience, whenever it may be given to the ins. world, will be of vast importance. (See 1871.)

In 1845 Mr Neison pub. his *Contributions to Vital Statistics, etc.*, wherein he says:

It will no doubt cause some uneasiness in the minds of inquirers to find that so highly important and industrious a class of men as clerks should stand lowest in the scale of the above employments [*viz.* miners, bakers, plumbers, painters, glaziers, clerks]; and that from 20 to 60 their expectation of life should be only 75 p.c. of the general average. The expectation of life among plumbers, painters, and glaziers in the same period is equal to 81 p.c., miners 85 p.c., and bakers 88 p.c., of the general average. . . . At age 30 the difference between the expectation of life in the rural districts and in Liverpool is 8.2636 years; but the difference between clerks and labourers is 13.0211 years, and so also at other periods of life. . . . In the comparison between clerks and labourers the expectation for clerks has been for the average of the three districts [rural, town, and city]; but if it had been taken for the city districts only, a much greater difference would have been found, and, consequently, the influence of employments appeared the greater.

He gives a mort. T. for clerks.—See 1857.

Mr. Ratcliffe, in his *Rate of Mort. and Sickness existing among Friendly Sos., particularly for Various Trades, Occupations, and Localities*, pub. 1850, says:

Clerks and schoolmasters are inhabitants of all the localities from which the general results have been experienced. They constitute about 1.4 p.c. of the whole of the lives previously given in the rural, town, and city districts, and relative to vitality are the very worst class of lives shown in this experience. At T. XLV. it will be seen that one-half of the persons forming this class die off on attaining the age 54.5—*thus showing an inferior vitality of nine years, as compared with the general class of lives*, and with those of E. and W. . . .

Clerks and schoolmasters show a less expectation at the decennial periods of life, 20 and 30, than any other class of lives here experienced upon. At the other periods, 40, 50, and 60, they show the least expectation, with the exception of letter-press printers and compositors; and at the latter periods, the last-named class show a less inferior expectation, though to a very limited extent, than clerks and schoolmasters.

In the 3rd. ed. of *Contributions to V. Statis.*, etc. (pub. 1857), Mr. Neison again refers to the mort. of clerks; but he does not throw any new light upon the subject, except that a T. of Expectation is furnished, and his mort. T. is thus rendered complete. The data from which the T. is deduced will be explained under OCCUPATIONS. We curtail the decimal places in cols. 4, 5, and 6.

MORT. T. FOR CLERKS (MALES), RURAL, TOWN, AND CITY DISTRICTS COMBINED.

Age.	Living.	Dying.	Mort. p. c.	Specific intensity	Expec- tation.	Age.	Living.	Dying.	Mort. p. c.	Specific intensity	Expec- tation.
10	100,000	396	.39	252.46	39.98	56	42,418	2422	5.70	17.51	13.11
11	99,604	395	.39	252.46	39.14	57	39,996	2506	6.26	15.96	12.88
12	99,209	401	.40	247.64	38.29	58	37,490	2464	6.57	15.21	12.71
13	98,808	414	.41	238.49	37.44	59	35,026	2323	6.63	15.08	12.56
14	98,394	435	.44	225.98	36.60	60	32,703	2107	6.44	15.52	12.42
15	97,959	464	.47	211.19	35.76	61	30,596	1837	6.00	16.65	12.24
16	97,495	499	.51	195.19	34.93	62	28,759	1631	5.66	17.64	11.99
17	96,996	576	.59	168.43	34.11	63	27,128	1475	5.43	18.38	11.68
18	96,420	692	.71	139.27	33.31	64	25,653	1362	5.31	18.82	11.33
19	95,728	847	.88	113.00	32.54	65	24,291	1284	5.28	18.91	10.94
20	94,881	1039	1.09	91.32	31.83	66	23,007	1235	5.36	18.63	10.52
21	93,842	1264	1.34	74.23	31.18	67	21,772	1201	5.51	18.12	10.09
22	92,578	1464	1.58	63.25	30.60	68	20,571	1180	5.73	17.42	9.65
23	91,114	1638	1.79	55.64	30.08	69	19,391	1169	6.02	16.58	9.20
24	89,476	1785	1.99	50.12	29.62	70	18,222	1153	6.32	15.64	8.76
25	87,601	1907	2.17	45.97	29.21	71	17,069	1165	6.82	14.65	8.32
26	85,784	2004	2.33	42.79	28.85	72	15,904	1161	7.29	13.70	7.89
27	83,780	2026	2.41	41.35	28.53	73	14,743	1152	7.81	12.80	7.48
28	81,754	1979	2.42	41.30	28.23	74	13,591	1137	8.36	11.95	7.07
29	79,775	1870	2.34	42.66	27.91	75	12,454	1116	8.95	11.16	6.67
30	77,905	1704	2.18	45.72	27.57	76	11,338	1088	9.59	10.42	6.38
31	76,201	1486	1.95	51.25	27.18	77	10,250	1062	10.36	9.65	5.89
32	74,715	1317	1.76	56.72	26.71	78	9188	1036	11.27	8.87	5.51
33	73,398	1192	1.62	61.57	26.18	79	8152	1004	12.31	8.11	5.15
34	72,206	1108	1.53	65.18	25.60	80	7148	965	13.50	7.40	4.80
35	71,098	1061	1.49	66.97	24.99	81	6183	917	14.82	6.74	4.48
36	70,037	1051	1.50	66.66	24.36	82	5266	855	16.24	6.15	4.17
37	68,986	1065	1.54	64.80	23.73	83	4411	783	17.75	5.63	3.88
38	67,921	1101	1.62	61.65	23.09	84	3628	703	19.36	5.16	3.61
39	66,820	1160	1.73	57.63	22.46	85	2925	616	21.07	4.74	3.36
40	65,660	1238	1.88	53.05	21.85	86	2309	528	22.87	4.37	2.13
41	64,422	1333	2.06	48.33	21.26	87	1781	442	24.80	4.03	2.91
42	63,089	1388	2.19	45.45	20.70	88	1339	360	26.85	3.72	2.70
43	61,701	1404	2.27	43.95	20.16	89	979	284	29.03	3.44	2.52
44	60,297	1385	2.29	43.53	19.61	90	693	218	31.34	3.19	2.34
45	58,912	1333	2.26	44.18	19.06	91	477	161	33.78	2.96	2.19
46	57,579	1253	2.17	45.95	18.49	92	316	114	36.02	2.77	2.05
47	56,326	1215	2.15	46.36	17.89	93	202	77	38.07	2.62	1.93
48	55,111	1217	2.20	45.29	17.28	94	125	50	39.93	2.50	1.82
49	53,894	1255	2.32	42.93	16.66	95	75	31	41.60	2.40	1.70
50	52,639	1326	2.51	39.69	16.04	96	44	19	43.08	2.32	1.55
51	51,313	1426	2.77	35.99	15.44	97	25	12	47.31	2.11	1.34
52	49,837	1570	3.14	31.78	14.87	98	13	7	53.99	1.83	1.11
53	48,317	1751	3.62	27.59	14.34	99	6	4	61.30	1.63	.83
54	46,566	1960	4.20	23.75	13.86	100	2	2	75.00	1.33	.50
55	44,606	2188	4.90	20.38	13.42						

Mr. A. H. Smee, the medical officer of the *Gresham, Provident Clerks*, and other ins. asso., in his return of the "causes of death" in the *Gresham*, pub. 1871, gives a T. of the relative mort. from each of the 12 great classes of disease, in 1000 insured clerks obs. upon—in which we assume the mort. of the *Provident Clerks* is placed under contribution:

Zymotic	136	Disease of Digestive Organs	86
Uncertain Seat	61	Disease of Urinary Organs	41
Tubercular	255	Disease of Generative Organs	2
Disease of Nervous System ...	146	Age and Debility	27
Disease of Circulatory Organs ...	62	Violence	54
Disease of Respiratory Organs...	124	Unknown	6

CLIFTON, MORT. T. FOR.—This place [Co. Gloucester] has, at least during the greater part of the present century, been a famous health resort. Its close proximity to Bristol, not altogether famous for the standard of its health, has caused an increased interest to be felt as to the measure of its actual and comparative salubrity. The following are the main facts at our command regarding it.

Mr. Robt. Rankin, in his *Familiar Treatise on Life Assu. and Annu.*, pub. 1830, gave a mort. T. for Clifton, based upon data arranged with a view to accuracy. He says:

The great influx of persons to Clifton, both as visitors and permanent residents, rendered a correct exclusion of the deaths among them from this T. almost impracticable. With the assistance, however, of the clerk of the parish, who had held the office for nearly 10 years, I was enabled so to approximate the truth, as to be quite confident that every add. step towards it would exhibit the duration of life in this parish in a more favourable point of view. It would now, from the vastly increased and still rapidly increasing pop. (principally from immigration), be impossible to form a T. from the burial regis. of the parish with the least pretension even to an approximation to the true rate of mort. amongst its inhabitants.

Mr. Rankin's painstaking methods have been more fully explained under BRISTOL, MORT. T. FOR. Here is his T., which he designates :

"PROBABILITIES AND EXPECTATIONS OF LIFE IN THE PARISH OF CLIFTON."

Age.	Living.	Dying.	Expecta- tion.	Age.	Living.	Dying.	Expecta- tion.	Age.	Living.	Dying.	Expecta- tion.
0	784	141	31'53	33	347	5	28'42	66	142	6	11'26
1	643	58	37'34	34	342	5	27'82	67	136	6	10'73
2	585	29	39'99	35	337	5	27'23	68	130	6	10'21
3	556	27	41'05	36	332	6	26'63	69	124	6	9'52
4	529	15	42'12	37	326	6	26'11	70	118	8	9'14
5	514	9	42'33	38	320	6	25'59	71	110	8	8'77
6	505	9	42'08	39	314	6	25'07	72	102	8	8'42
7	496	9	41'83	40	308	6	24'55	73	94	8	8'09
8	487	9	41'60	41	302	6	24'03	74	86	8	7'80
9	478	8	41'37	42	296	6	23'51	75	78	8	7'55
10	470	8	41'07	43	290	6	22'98	76	70	6	7'36
11	462	4	40'77	44	284	5	22'46	77	64	6	7'00
12	458	4	40'12	45	279	5	21'85	78	58	6	6'67
13	454	4	39'47	46	274	5	21'24	79	52	6	6'38
14	450	4	38'82	47	269	5	20'63	80	46	6	6'15
15	446	5	38'17	48	264	5	20'01	81	40	4	6'00
16	441	5	37'59	49	259	5	19'40	82	36	4	5'61
17	436	5	37'01	50	254	5	18'77	83	32	4	5'25
18	431	5	36'44	51	249	7	18'12	84	28	4	4'93
19	426	5	35'86	52	242	7	17'63	85	24	3	4'67
20	421	5	35'28	53	235	8	17'14	86	21	3	4'26
21	416	5	34'70	54	227	8	16'73	87	18	3	3'89
22	411	6	34'11	55	219	8	16'32	88	15	3	3'57
23	405	6	33'61	56	211	7	15'92	89	12	2	3'33
24	399	6	33'11	57	204	7	15'45	90	10	2	2'90
25	393	6	32'61	58	197	7	14'98	91	8	2	2'50
26	387	6	32'10	59	190	7	14'50	92	6	2	2'17
27	381	6	31'60	60	183	7	14'05	93	4	1	2'00
28	375	6	31'10	61	176	7	13'59	94	3	1	1'50
29	369	6	30'60	62	169	7	13'13	95	2	1	1'08
30	363	6	30'09	63	162	7	12'68	96	1	1	'50
31	357	5	29'59	64	165	7	12'23				
32	352	5	29'00	65	148	6	11'78				

At the Brit. Asso. Meeting at Bath, in 1864, Dr. J. A. Symonds, M.D., read a paper on *The Sanitary Statistics of Clifton*, of which the following is but a very brief outline :

The point of the paper is to show the importance of adding verbal explanations to statistical returns. The R.-Gen. Rep. had given 24 in 1000 as the death-rate of Clifton, calculated from the deaths in the quarter ending June, 1864. This statement would be very injurious to the reputation of Clifton as a watering-place, unless it were explained that its name is given to a large poor-law district, to the pop. of which Clifton proper contributes little more than *one-fifth*. The several sub-districts of Clifton Union are described in detail, as to their sanitary characteristics, and as to their respective death-rates, calculated from the ann. returns of deaths in the five years from 1859 to 1864. The average for Clifton proper is 17 in 1000; and if a quarterly return be a fair basis of calculation, it would be found that in some quarters the death-rate amounted to only 15 in 1000. On comparing the death-rates of the several sub-districts of Clifton Union, the influence of urban and rural agencies is shown. The highest death-rates denote the combination of poverty and crowding. He compared the death-rates of several localities in England, and ascertained that the average for a crowded town was 24 in 1000; for a rural district, 15; and for a mixed district, 21. Clifton Union is a mixed district. One of its sub-districts, three miles distant from Clifton proper, gives 24 in 1000; for it belongs really to one of the most miserable quarters on the outskirts of Bristol. A purely local sub-district, Westbury, gives 15 in 1000, and Clifton proper 17 in 1000. But the average of the whole union is 21.

This subject will be further discussed under LOCALITY. We assume also that Clifton was one of the districts included in Dr. Farr's *Healthy Life T.*

CLIMACTERIC (properly *Klimacteric*, from the Greek, the *step of a ladder*).—A stage in the progression of the life of man, usually divided into periods of 7 years; thus the 7th period, or 49, is the "lesser climacteric"; the 9th period, or 63 years, the "climacteric"; while 81 (which is not a multiple of 7) is the "grand climacteric." Some writers say the climacteric period is every 9 years; this would conform to 81 as the 9th period of nines. It is affirmed that notable alterations in the health and constitution of a person happen at these periods. Cotgrave says, "Every 7th, or 9th, or 63rd year of a man's life, all very dangerous—but the last most." Hippocrates is said to have referred to these periods in his writings 383 B.C.

Certain years in the life of man have been from great antiquity supposed to have a peculiar importance, and to be liable to singular vicissitudes in his health and fortunes. This superstitious belief is said to have originated in the doctrines of Pythagoras. The

well-known notice of the climacterical year 63, supposed to be particularly dangerous to old men, in a letter of Augustus Cæsar preserved by Aulus Gellius, evinces its prevalence amongst the Romans. This year has been called by some astrological writers "heroicus," as having been peculiarly fatal to great men. The virtue of this year seems to consist of its being a multiple of the two mystical numbers 7 and 9. It is certainly singular that usage should have attached in all countries peculiar distinctions to those years which are denoted by compounds of the number 7. Thus 14 has been fixed for various purposes as the epoch of puberty; 21 of full age; 35 is selected by Aristotle as the period when the body is in its highest physical vigour. The same author supposes the vigour of the mind to be perfected at 49; 63 to be the grand climacteric year; 70 the limit of the ordinary age of man. Bodinus says that 7 is the climacteric number in *men*, 6 in women.—*Brande*.

Modern writers have differed much regarding this climacteric theory; the great majority of them more or less discarding it. For ourselves, we look upon it as among the last surviving superstitions of the "medicine-men"—only surviving alchemy, because less capable of practical refutation. Any half dozen unadjusted mort. T. could dispel it for ever. But we must glance at a few authorities.

In 1704 the continental writer, Carolus L. Funckert, pub. a thesis: *Annorum climactericorum explicatis*—one of the very few separate publications which have appeared on the subject.

Sir John Wm. Lubbock, in a paper which he read before the *Cambridge Philosophical So.* as far back as 1828, said:

It is to be regretted that those who have pub. T. of mort. should generally not only have altered the radix or number of deaths upon which the T. is constructed, but also the number of deaths recorded at different ages, in order to render the decrements uniform; this is the case particularly with the *Northampton T.* . . . For if obs. were continued to a sufficient extent, they would prob. show that some ages are more exposed to disease than others—that is, that they would indicate the existence of climacterics, of which alterations such as these destroy all trace.

In 1845 Dr. Wm. Guy contributed to the *Statistical Journ.* his famous paper: *On the Duration of Life among the Families of the Peerage and Baronetage of the U.K.* After preparing a series of tables illustrative of his main purpose, he proceeds to review their collateral uses, and therein he says:

The facts from which the T. are formed may be used to determine another question of some little interest, namely, *are there any particular ages marked by an excessive mort.?* The ancients, as is well known, attached great importance to certain ages, attributing to them unusual danger and a high mort. These ages, which were designated as the climacteric years, are the 49th, 63rd, and the 81st. . . . Although the fanciful value attached to No. 7 and its multiples is perhaps a sufficient explanation of the importance attached to the first two periods, it may possibly have happened that a rude obs. of the ages at which death took place bore its part in the estab. of the theory. It may, therefore, be worth while to submit this theory to the test of facts. The inquiry indeed derives an add. interest from the occasional revival in modern times of the superstitious importance formerly attached to certain numbers.

He then refers to the T. of "ages at death" of the several persons he had been observing upon. The number of deaths at age 49 is found to be somewhat in excess of the numbers of several preceding and succeeding years; it exceeds by six deaths the number at the age of 47, which is the highest number for all the earlier ages; and by eight deaths the highest number for the next five years. The precise numbers are at 49 years, 45 deaths; at 47 years, 39 deaths; and at 51 years, 37 deaths. The number of deaths at the age of 63, on the other hand, falls short of the number in the year preceding by two deaths; and only exceeds the number in the 61st and 65th years by three deaths. Again, the number of deaths at 81 years of age, though somewhat greater than in the year following, and higher than in every preceding year, falls greatly short of the number in the year immediately preceding. Of the three climacteric years then, says Dr. Guy, "there is only one (49, or the lesser climacteric) which displays any excess of deaths; and even in this case the excess is not so large but that it may safely be attributed to a coincidence." He then tests the matter in the following form: take the year before and the year after each climacteric year, and compare this triad with the triads immediately preceding and following. Thus:

Years.	Deaths.	Years.	Deaths.	Years.	Deaths.
48, 49, & 50	... 108	62, 63, & 64	... 142	80, 81, & 82	... 118
45, 46, & 47	... 97	59, 60, & 61	... 129	77, 78, & 79	... 115
51, 52, & 53	... 104	65, 66, & 67	... 122	83, 84, & 85	... 78

Although the triads comprising the climacterics exhibit a slight excess of deaths over the preceding and succeeding triads, the excess is not more considerable than in the case of other years to which no peculiar importance attaches. Thus the 33rd and 35th years, taken either separately or in connexion with the years immediately preceding or following, exhibit a similar excess. In the case of the three years immediately preceding that which comprises the 81st year, there is a great diminution in the number of deaths; but it is only such a decrease as must happen towards the end of life, when the numbers living at each age must of necessity very rapidly decrease. *From all that has been now stated, it would appear that there is no sufficient reason for attaching to the climacteric years an unusual importance, though there seems to be a slight increase of deaths at or about these years.* [vol. viii., p. 75.]

CLIMACTERIC DISEASE.—This term was formerly applied to a sudden and general

alteration of health, occurring at a certain period of life, and of uncertain duration.—*Hoblyn*. It has more lately been applied to that declension of bodily and vital powers which is frequently observed to come on in the later period of life, and from which many persons again rally so as to attain extreme old age.—*Brande*.

The late Sir Henry Hallford, "the Physician of the Aristocracy," in one of those brilliant essays (pub. 1831) in which he aired his Latinity, carried the theory of climacterics so far as to attribute a special disease as an incident thereof. This essay, *On the Climacteric Disease*, forms No. 1 of his pub. series. The affection he describes represents the wearing out of the nervous system, through the agency of an overwrought brain, and exhausting mental and emotional influences. The period of life at which the learned author supposed this to take place is between the 50th and 75th year—a somewhat wide range.

In a paper read by Dr. G. Shann, M.D., before the Social Science Congress at York in 1864, *On the Influence of Occupation and Age on the Health of those engaged in some of the Commoner Manual Employments*, etc., that writer says :

My obs. among the operative classes lead me to the conclusion that they also have their climacteric disease, representing not the outworn condition of the organs of thought and feeling, but the destructive effects of unremitting physical exertion on the degenerating nervous and muscular systems of organic and animal life. This is not the occasion to enter at length on the subject ; it is sufficient for my present purpose to obs. that the investigations made led me to the inference that, in the classes of which I am now speaking, the period of climacteric failure is most marked between the ages of 35 and 49 ; terminating, it would seem, about the time when that of the class alluded to commences. I would only point to one circumstance bearing on this question, which appears on the face of the statistical T., viz. *that throughout nearly every class of workmen, considerably the largest per-centage of those suffering from anæmia, or impoverishment of blood and failing nutrition, is found in group A—that is, at the period of life of which I am speaking.* [OCCUPATION.]

CLIMACTERICAL YEAR.—Either of the periods indicated in our art. CLIMACTERIC.

CLIMATE (from the Greek, *a region*).—The term *climate* is derived from the old mathematical geographers, who were accustomed to draw imaginary lines on the earth's surface parallel to the Equator, and the successive "climates" were the spaces and regions between these lines. At present the term *climate* denotes merely the temperature and other conditions of the atmosphere of different countries and districts in reference to their effects upon the health of persons inhabiting them.

Climate in its most ordinary and general acceptation embraces all those modifications of the atmosphere by which our organs are sensibly affected ; such as temperature, humidity, variations of barometric pressure, the tranquility of the atmosphere, or the effects of winds, the purity of the air or its admixture with gaseous emanations more or less salubrious ; and lastly, the habitual diaphaneity of the atmosphere—that serenity of the sky so important on account of the influence which it exercises, not only on the development of organic tissues in vegetables and the ripening of fruits, but also on the *ensemble* of moral sensations which mankind experience in the different zones.—*Brande*.

This same writer tells us that there are two general causes upon which the climate peculiar to any country principally depends. 1. Its distance from the Equator. 2. Its altitude above the level of the sea. But their effect is generally modified by many circumstances exerting a partial influence. Among these may be enumerated the configuration and extent of the country ; its inclination and local exposure ; the directions of the chains of mountains by which it is intersected, or which are in its vicinity ; the nature of the soil as it is more or less favourable to radiation ; absorption and evaporation ; the proximity to or distance from seas ; the action of winds, blending the temperatures of different latitudes ; and even the changes produced by cultivation. *The appreciation of all these causes, which modify the results deduced from the consideration of latitude and elevation alone, and the effect produced by their combined operation, constitutes the science of Climatology.*—*Dict. of Science*.

The chief constituents of the climate of any place, are : (1) the temperature ; (2) the moisture of the atmosphere ; (3) the pressure of the air ; and (4) the prevailing winds. But these are liable, in their operation, to modification from or by the causes already stated. The following T. of temperatures may be useful for future reference :

Places.	Latitude.	Mean Temperature			Range.
		During the Year.	Of the warmest month.	Of the coldest month.	
Auckland, New Zealand	36-51 South	59½	70	51	19
Madeira.. .. .	32-37 North	68	74	63	11
Rome.....	41-53 „	60	77	42	35
Montpelier	43-36 „	59	78	42	36
London	51-30 „	50	64	37	27
Dublin	53-21 „	49	61	35	26
Edinburgh.....	55-57 „	47	59	38	21

The other points will be illustrated under their respective heads.

In the writings of Hippocrates, B.C. 400, will be found many minute meteorological

obs. in connexion with disease. This more especially in his *Epidemics, Aphorisms, and Airs, Waters, and Places*. In this last work we are told :

Whoever desires properly to investigate the art of medicine must do this : First take into consideration the seasons of the year, and how each is capable of operating [on the system] ; for they not only do not resemble each other, but differ widely the one from the other in the changes [they bring about]. Then the cold and hot winds [must be noted], especially those that are common to all nations, and then those that are peculiar to any particular district.

When we consider how deficient he was in those appliances which modern science has given to us to facilitate our pursuits, we cannot but acknowledge the consummate wisdom and foresight of one who saw *the relation between atmospheric change and disease* more than two thousand years ago, and who, in the application of his knowledge, was nearly, if not quite, as advanced as our professors of the present day.—*Haviland, 1855.*

One of the first modern writers who drew attention to the influence of climate upon health was Graunt, who, in his *Natural and Political Observations*, 1661, reviewing the causes of death, and the proportions resulting therefrom, says :—“The which proportion doth give a measure of the state and disposition of this climate and air as to health ; these acute and epidemical diseases happening suddenly and vehemently, upon the like corruptions and alterations in the air !”

Halley, in his famous paper, *An Estimate of the Degrees of the Mort. of Mankind*, etc., submitted to the Royal So. in 1693, says :

It may be objected that the different *salubrity* of places does hinder this proposal from being universal ; nor can it be denied. But by the number that die, being 1174 p.a. in 34,000, it does appear that about a 30th part die yearly, as Sir Wm. Petty has computed for Lond., and the number that die in infancy is a good argument that the air is but indifferently salubrious ; so that by what I can learn, there cannot perhaps be one better place proposed [than Breslau] for a standard. At least it is desired that in imitation hereof, the curious in other cities would attempt something of the same nature, than which nothing perhaps can be more useful.

In 1742 Dr. John Tennent pub., *Physical Inquiries discovering the Mode of Translation in the Constitution of Northern Inhabitants going into Southern Climates*, etc.

In 1749 Dr. Thomas Short pub. *General Chronological Hist. of the Air, Weather, Seasons, Meteors, etc., in Sundry Places and Different Times* ; while in the following year, in his *New Observations on the B. of Mort.*, etc., he gave an appendix on the same subject. Short may be regarded as one of the first English writers who entered upon a series of obs. in regard to the climate, and its influence upon human health and longevity.

In 1780 Dr. Alexander Wilson pub. *Obs. relative to the Influence of Climate on Vegetable and Animal Bodies*.

In 1781 Dr. William Falconer pub. *Remarks on the Influence of Climate, Situation, Nature of Food, and Way of Life on the Disposition and Temper, Manners, etc., of Mankind*. This hardly comes within the scope of our present inquiry.

Early in the present century the well-known Dr. Casper, of Berlin, wrote on the influence of climate upon health. The following is a synopsis of his obs. 1. In Berlin, while the month of Jan. is the least, Dec. is most favourable to health. 2. The greatest number of deaths occur in spring, and the smallest number in summer. 3. Extremes of temperature are dangerous to life. 4. A high barometrical pressure tends to increase, while a low barometrical pressure tends to decrease, the rate of mort. 5. The influence of atmospheric pressure on human life varies in different seasons. 6. No condition of air is so dangerous to life as dry cold ; on the contrary, humid cold has the greatest tendency to support life. 7. Of all the seasons of the year the winter gives rise to the greatest number of cases of inflammatory disease, while in the spring they are most fatal, especially cases of pneumonia. 8. Cold winters and warm springs, summer, and autumns increase the danger and fatality attendant on inflammation attacking the brain and respiratory organs, and *vice versa*. 9. The maximum of mort. from phthisis occurs in spring ; and after this season in winter. The maximum mort. from this disease occurs in autumn and summer. 10. Variations in the state of the atmosphere exert but little influence upon the relative number of deaths from phthisis. 11. Nervous fever is most frequent and fatal in autumn ; it is less frequent and fatal in spring. 12. The influence of the weather and seasons upon health varies with the different periods of life. 13. This influence is most marked in the ages of infancy and puberty, but is least marked in the first septennial period of existence. 14. From the 20th year upward the winter is most dangerous, and the summer the most favourable season to life and health ; and the older the individual, the more striking is this difference.

In 1801 there was pub. *Eight Meteorological Journals of the Years 1793 to 1800, kept in Lond. by William Bent ; to which are added Obs. on the Diseases in the City and its Vicinity. Also an Introduction, including Tables from Eight preceding Journals of the Greatest, Least, and Mean Height of the Barometer and Thermometer in every Month of the Years 1785 to 1792.*

In 1813 Dr. James Johnson pub. *The Influence of Tropical Climates on European Constitutions*—a work which has passed through many editions. In 1818 the same author pub. *Influence of the Atmosphere on the Health of the Human Frame, with Researches on Gout and Rheumatism*.

In 1824 Dr. James Wallace pub. *Voyage to India, with Instructions for the Preservation of Health in Indian Climates*.

Mr. George Farren said (1829), that the duration of human life should vary according to the influences of different climates, and be affected in individual instances by casual circumstances, is no more a subject of wonder than that plants of different soils shall vary in strength and duration, in season and in beauty.

In 1829 Sir James Clark pub. *The Influence of Climate in the Prevention and Cure of Chronic Diseases*. [2nd. ed. 1830.] About the same time he also pub. *The Sanative Influence of Climate*. [4th ed. 1846.] The first-named work contains: (1) a brief account of the conditions of the atmosphere of different countries or districts in reference to the effects upon the health of persons inhabiting them; (2) an enumeration of those *diseases* which are most decidedly benefited by change of climate, and the peculiar situation most suitable to each. It is no part of our present purpose to enter upon such details. We propose only to deal with the subject under its more general aspects. This writer remarks truly that although the power of different climates to produce as well as to alleviate and cure diseases is well estab. as a matter of fact, yet perhaps there is nothing in general science more unsatisfactory than the manner in which we are able to explain this influence; and certainly there is nothing in physic more difficult than to direct successfully its application.

In 1835 Dr. Robley Dunglison pub. in Philadelphia a work, *On the Influence of Atmosphere and Locality, Change of Air, Seasons, Food, Sleep, etc., on Human Health, constituting Elements of Hygiene*.

In a paper, *On the Sickness and Mort. among the Troops in the West Indies*, prepared from official documents by Capt. A. M. Tulloch, and read before Statistical So. in 1838 [*Statis. Journ.* vol. i. p. 129], there is a good deal of useful information regarding the climate of the several West Indian Isles. Thus:

The climate of Antigua is principally remarkable for a want of moisture; indeed the average fall of rain is not above 45 inches ann.; a very small quantity, considering the rapid evaporation which takes place under a tropical sun. Even dew is but scanty; and the island often suffers from severe droughts. The rainy season is very uncertain. . . . The island of St. Christopher lies about 50 miles north-west of Antigua. . . . The climate, like that of most mountainous countries within the tropics, is subject to great vicissitudes; the vapour drawn up during the day, descending during the afternoon and evening, causes at these periods a considerable reduction of temperature, particularly from Nov. to April. More rain falls than in the adjacent island of Antigua, especially during Oct., Nov., and Dec.; but we possess no exact measurement of the quantity.

In another section of this paper he deals with Jamaica:

In this island almost any variety of climate may be procured. At a residence 4200 ft. above the level of the sea, the range of the thermometer is from 55° to 65°; in the winter it falls even as low as 44°. There the vegetation of the tropics disappears, and is supplanted by that of temperate regions. Showers are common in the interior almost throughout the whole year, but they do not fall with the same violence as in the plains, and the quantity of rain appears to be less. The air is exceedingly humid, and subject to dense fogs. . . . *An investigation into the extent of mort. at each station shows that all are by no means equally unhealthy; nay, some approach in salubrity of climate to Gt. Brit.*

A table is given illustrative of this fact. There are also some details of the climate of the Bahamas and Honduras.

In *An Account of Algeria, or the French Provinces in Africa*, drawn from official documents, which appeared in vol. ii. of *Statis. Journ.*, 1839, we find the following:

The climate on the coast varies little from year to year. There are generally three seasons—the temperate, which lasts from March to June, when the weather is fine and very agreeable in the neighbourhood of Algiers; the hot from July to Nov., when the ground is dried up, the springs fail, and the whole country is scorched by the sun; and lastly, the rainy season, which prevails from Dec. to Feb., but is frequently interrupted by fine days. Fogs are common in the plain, but not in Algiers. The prevalent winds are from the north and north-west, and the windy season is from Nov. to April. The Simoom, here called Khamsin, is often experienced, and is most frequent in the month of Sept.

Many other important details are given.

In a letter from Dr. Farr to the Reg.-Gen., pub. in the 2nd R., 1840, is the following:

In the diseases regis. in 25 divisions of the kingdom, the influence of cities, occupations, and perhaps climate, may be traced. . . . In investigating the effects of climate, the influences of density, of the ages of the living, of occupation, and of differences of food, must be eliminated. The climate of the Channel is the same as it was at the end of the last century; but the mort. of the crews of vessels in the Channel is prob. not now a third of the mort. at that period. The army reports, drawn up with so much ability by Major Tulloch and Mr. Marshall, exhibit the influence of barracks, as decisively as they do the effects of climate on English soldiers. . . . Climate should always be considered separately, in reference to the indigenous inhabitants and to strangers—the natives either of a similar or of a different climate.

In the *Report of a Committee of the Statistical So. of Lond. appointed to collect and Inquire into V. Statis. upon the Sickness and Mort. among the European and Native Troops serving in the Madras Presidency from the Year 1793 to 1838*, pub. in the *Journ.* of the So. 1840 [vol. iii. p. 113], we are told:

As the localities and climate of Moulmein, Penang, Malacca, and Singapore, which, although under the Madras Gov., are entirely separated from the rest of the Presidency, differ very materially from those of Madras, it has been thought proper to separate the returns from those places, extending over a period of 40 years, 1829 to 1838, from those of the Madras Presidency, and to make them the subject of a separate inquiry. . . . It is obvious that no minute account of the climate and local peculiarities of so vast an extent of country can be given until the several stations are separately examined.

In 1842 Dr. S. Forry pub. in N. Y. *The Climate of the United States, and its Endemic Influences*. This writer declares that "Climate constitutes the aggregate of all the external physical circumstances appertaining to each locality, in its relation to organic nature."

In the *Statistical Journal* for 1843 [vol. vi. p. 133] there is a paper by Dr. W. A. Guy : *An Attempt to Determine the Influence of the Seasons and Weather on Sickness and Mort*. The writer says :

The present inquiry was suggested by a striking coincidence obs. in the recently pub. Report of the King's College Hospital for 1842, *between the prevalence of sickness in the several seasons and the temperature*. This led to an examination of the B. of Mort. for the same year, in which a similar coincidence was observable between the temperature and the number of deaths in the several seasons. A desire to ascertain whether these were mere coincidences, or the general rule of sickness and mort., prompted an examination of the records of sickness and mort. in past years; and the results of this examination are embodied in the present communication.

The inquiry was conducted under two heads :—1. As to the relation subsisting between the seasons and weather, and the amount of sickness and mort. during the year 1842; and 2. A comparison of the results obtained for 1842 with those of former years. After reducing the results of the obs. into tabular form, Dr. Guy remarks :

From the first T. it appeared that besides the coincidence between the temperature and the number of diseases, there was also a coincidence between the dew-point and the amount of sickness. This is at once explained by comparing the temperature and dew-point, which are found to coincide for nine months out of the twelve, and to differ only in those months between which the range of temperature does not exceed three degrees. The one condition of atmosphere, indeed, is closely dependent upon the other; so that the obs. which apply to the one hold good with regard to the other also.

In consequence of this close correspondence between the temperature and the hygrometric state of the air, as indicated by the dew-point, it is obviously possible to attribute the relation which exists between the sickness and those two atmospheric conditions to either of them. It is necessary, therefore, to determine how far the sickness coincides with the hygrometric state of the air. Now the dew-point, taken alone, is not a measure of the quantity of moisture which the air contains; the true measure being the elasticity of vapour at the real atmospheric temperature divided by the elasticity of the dew-point—the quotient expressing the quantity of aqueous vapour contained in the air. . . .

There still remains to consider the influence of the seasons and weather on the mort. of the year 1842. . . . From the foregoing considerations, then, it follows that during the year 1842, *the atmospheric condition which exercised the most marked influence on sickness and mort. was temperature*; and it may be stated generally that the total sickness varied directly, and the mort. tended to vary inversely as the temperature.

The learned Doctor then extended his inquiries over other years, and, while finding exceptions, considered the foregoing rule estab.

In the same vol. of the *Statis. Journ.*, 1843 [vol. vi. p. 240], there is a paper by Sir John Boileau, Bart., *Statistics of Nice*, in which are many interesting details regarding this now well-known winter resort. "Its climate is supposed to be the mildest on the north coast of the Mediterranean, owing to the gradually increasing lines of hills which shelter it to the north, east, and west, and continue up to the Alps, only opening on the south."

In 1843 also Dr. Robert Armstrong pub. *The Influence of Climate, and other Agents, on the Human Constitution, with Reference to Disease amongst Seamen*.

In an exhaustive paper by Mr. J. T. Danson—*Some Particulars of the Commercial Progress of the Colonial Dependencies of the U.K. during the 20 Years 1827-46*—read before the Statis. So. in 1849 [vol. xii. p. 349], we find the following regarding the climate of the Australian Colonies :

It would appear, from the experience hitherto had, that the continental colonies have a peculiar climate—two or three years increasing drought, followed by one in which no rain falls, occurring at regular intervals of 10 or 12 years. These droughts are succeeded by heavy rains, and a recurrence of the ordinary course of the seasons. Van Dieman's Land is comparatively little affected by this peculiarity of the Australian climate; and New Zealand, still further removed, seems to be wholly exempt from it. The various effects are already visible in the commerce of the several colonies. Not only is N. S. Wales largely dependent upon foreign supplies of grain food, but the colony has experienced severe commercial embarrassments, traceable mainly to the periodical visitations of drought.

With the development of the V. Statis. of these Colonies we shall gain some important deductions from these peculiarities of climate.

In 1849 Dr. Julius Jeffereys pub. *Remarks on Climate and Affections of the Throat and Lungs*.

In 1851 the late Col. Sykes laid before the Statis. So. a paper, *Mort. and chief Diseases of the Troops under the Madras Gov., European and Native, from the Year 1842 to 1846 inclusive, compared with the Mort. and Chief Diseases of 1847* [vol. xiv. p. 109], in which the influence of climate is illustrated in a very remarkable manner. The author says :

That these local climatorial influences are important is manifested by the facts that the per-centage mort. for five years amongst Europeans varies from 2'353 p.c. in the Mysore division, to nearly 6 p.c. in the Ceded Districts and Hyderabad Subsidiary Forces and 6'022 p.c. in the Northern Division; and amongst the native troops from 0'808 p.c. in Malabar and Canara, 8'937 p.c. in China.

We have not space to follow up the subject, but the paper is well worthy of careful consideration.

In 1851 Dr. Arthur S. Thomson, M.D., read before the Statis. So. *A Statistical Account of Auckland, New Zealand, as it was Observed during the Year 1848* [vol. xiv. p. 227]. Some very instructive details are given regarding the influence of climate.

Dr. Farr, in that able paper on the *Influence of Elevation on the Fatality of the Cholera*,

read before the Statis. So. in 1852, and of which we have already spoken at some length [CHOLERA], says regarding climate :

Long experience alone can ultimately determine what climates are healthy ; and every locality must ultimately be judged by the test of such a calculation as has been applied to the districts of E. and W. But analogy justifies the inference from exp., in some cases brief and imperfect, that in parts of Canada, the U.S., South America, New Zealand, the Isles of the Pacific Ocean, and Southern Africa, the English race retains the energy, which it invariably loses in two or three generations on the low tropical lands of the West India Islands, of the West Coast of Africa, and of Southern Asia, where much of the best blood of England has been sacrificed without estab. permanent settlers, making any evident impression on the native pop., or producing any lasting fruits.

In 1853 Dr. J. R. Hubertz, of Copenhagen, read before the Statis. So. of Lond. a paper, *Statistics of Mental Diseases in Denmark according to the Census of 1847* [Journ. vol. xvi. p. 244]. The writer, under the head of "Climate," says :

Till now, it has been a generally received opinion, grounded on the faith of several writers, that mental derangement was less frequent in the south of Europe than in the north. For Italy and Spain, the very low numbers of 0·2 persons in 1000 have been quoted, whilst the censuses in the northern countries have given from 1 to 3 or 4 in 1000. But the modes of life, the education, the civil and political institutions, the religion, the manners, in the Northern and Southern people are so different that we should be quite at a loss to what cause to attribute the enormous difference of the numbers, if we did not take the trouble to examine the statistical facts of the different countries.

This he proceeds to do, eliciting some very interesting facts in his progress, and he finally concludes :

But if the sheltered places facing the south prove unfavourable to the procreation and propagation of the disease, they, perhaps, would be those that should have the greatest influence to make it disappear. If we are right in this supposition, the said places should be preferred for estab. intended for the cure of deranged persons.

In 1853 Dr. D. J. T. Francis pub. *Change of Climate as a Remedy in Dyspeptic, Pulmonary, and other Chronic Affections.*

In a paper read before the Brit. Asso. Meeting at Glasgow, 1855, by Mr. Robert Clarke, Surgeon, Colonial Med. Service, *Short Notes of the Prevailing Diseases of the Colony of Sierra Leone*, etc., there occurs the following suggestive passage :

Although Sierra Leone can no longer be justly called "the White Man's Grave," it must not be supposed that the climate has in any degree changed. That the mort. has diminished is unquestionable, but for this several causes may be assigned. . . The style and comfort of the houses occupied by Europeans are improved ; they dress in a manner better suited to the vicissitudes of the climate, a greater degree of temperance prevails, and the general use of quinine has considerably shortened and reduced the amount of illness and mort.

This paper is worthy of further consideration than we have space to give to it.

In 1855 Mr. Alfred Haviland, surgeon, pub. *Climate, Weather and Disease ; being a Sketch of the opinions of the most celebrated ancient and modern writers with regard to the Influence of Climate and Weather in producing Disease.* The author says :

In studying climate we study man ; for in tracing its effects in all their variety on the human frame and mind, we make ourselves acquainted with his laws, customs, psychical and physical capabilities, vices, virtues, and all that appertains to that protean animal. We find it in one region depressing, and in another elevating his various attributes ; here it seems to endue his person with capacity for excessive delight, there it blunts his nerves and reduces his psychical sensibility ; in one region it is an element in the cause of slavery, in another does it invigorate man, and stimulate him to stand up for his own freedom, and to obtain redress for others. In an analysis of its power we are struck with the relation that it bears to the diseases and morals of nations : with the former from the earliest periods has it been associated, and the great Hippocrates drew a graphic description of its influence in moulding the latter.

Again :

The climatic laws that regulate or seem to influence the features and growth of man in different latitudes, is a subject fraught with interest and difficulty ; and it is only when we regard the vastness of the subject that we feel convinced how few our chances are of ever being able to grasp it. . . . From the ephemeral change which takes place in the persons of individuals on account of the diurnal variations of the weather, to the indelible mark estamped upon large families by the permanent climatic influence under which they have lived for a lengthened period, there is a chain of phenomena so long that it is impossible for us to view all its links at once : many are evident, and have long been observed, whilst others prob. will for ever remain hidden, like the subterranean courses of those vast rivers which lose themselves in the trackless desert.

In the *Comptes Rendus* of the French Academy of Sciences for Feb. 1855, M. Junod has examined the influence of the relative positions of different quarters of great cities on the health and comfort of the inhabitants. He refers to the well-known fact that in nearly all the capitals of Europe, the opulent classes, or those who possess the largest choice in the selection of sites for habitations, *always reside towards the western quarters of the cities.* This peculiarity of capitals is not of modern growth, but is connected almost with their foundation. The palaces and the dwellings of the affluent seem, as it were, to spontaneously group themselves towards the most agreeable and salubrious districts. This is considered by those who have made the subject a study to be a result of the application of the principles of climatology. (See 1860.)

In 1855 Dr. James Ranold Martin, M.D., pub. *The Influence of Tropical Climates on European Constitutions, including Practical Obs. on the Nature and Treatment of the Diseases of Europeans on their return from Tropical Climates.*

In the same year Mr. Nicholas Whittey, of Truro, pub. a pamp. *Peculiarity of the Climate of the South-west of England.*

In a paper read before the Social Science Congress in 1860, by Prof. H. Hennessey, F.R.S., *On the Influence of Climate on the Sanitary Conditions of different Quarters of large Towns*, the writer, taking up the fact referred to by M. Junod in 1855, of which we have already spoken, says :

Such a law induces us to inquire for its origin among natural causes, and it thus suggests the utility of examining the general conditions of large towns as to climate. These conditions are twofold—first, such as the town possesses in common with the country in which it is situated ; and secondly, those which are promoted by the physical influence it directly exercises upon the atmosphere by which it is interpenetrated. Here we have nothing to say with reference to the first class of conditions, except in so far as they influence the second. Thus the law of distribution of the dwellings of the affluent is intimately connected with a general peculiarity of the atmosphere in Europe. *It depends on the fact that westerly winds are more prevalent than those blowing from other quarters.* Great towns are usually surrounded by highly-cultivated, well-drained rural districts : and hence the winds encountering the suburbs from the outside generally bring pure air. The air emerging from the town towards the country must have received more or less of the emanations which are always abundantly given off in large cities. . . . M. Junod ascribes the law to which he called attention, not so much to the direct action of the winds as to the influence of variations of atmospheric pressure by which they are accompanied. From this view I am compelled to dissent. . . . I would ascribe a more active part to the influence of ascending and descending currents of the atmosphere itself.

We cannot pursue the subject. Many suggestions are given possessing great interest. An abstract of the paper is pub. in the *Trans.* of the Asso., 1860.

In 1862 Dr. R. E. Scoresby-Jackson, M.D., pub. *Medical Climatology ; or a Topographical and Meteorological Description of the Localities resorted to in Winter and Summer by Invalids of Various Classes, both at Home and Abroad.*

In 1863 there was printed in the *Trans.* of the Royal So. of Edin. [vol. xxiii.] a paper by Dr. R. E. Scoresby-Jackson, M.D., *On the Influence of Weather upon Disease and Mort.* This is a most exhaustive paper, and will have to be mentioned under other heads, as DISEASES, etc. The author says :

The influence of weather upon disease and mort. has been acknowledged as a potent external force in every age, from that eminently speculative and credulous period when physicians professed to receive their diagnostic as well as their therapeutic inspirations from the stars, down to our own day. And yet there is perhaps no question in the whole cycle of medical sciences which has made slower progress than the one we have now to consider. People believe that the weather affects them. They speak of its influence sometimes commendingly, more frequently with censure, on the most trivial occasions ; and beyond a few commonplace ideas, the result of careless observation, or perhaps acquired only traditionally, they seldom seek a closer acquaintance with the subject. Our language teems with medico-meteorological apophthegms, but they are notoriously vague. The words which are most commonly employed to signify the state of the weather at any given time possess a value relative only to the sensations of the individuals uttering. The general and convertible terms—bitter, raw, cold, severe, bleak, inclement, or fine and bracing—convey no definite idea of the condition of the weather ; nay, it is quite possible that we may hear these several expressions used by different persons with reference to the weather of one and the same place, and point of time. . . . As a matter of purely medical inquiry, the influence of weather is also too frequently neglected. . . . I speak relatively to the amount of labour bestowed upon other branches of medical science.

Sir C. Dilke, in his *Greater Britain*, pub. 1868, gives a remarkable instance of the influence of climate in the case of California, and he only confirms the testimony of many others :

The peculiarity of climate carries with it great advantages. It is never too hot, never too cold, to work—a fact which of itself secures a grand future for San Francisco. The effect upon national type is marked. At a San Franciscan ball you see English faces, not American. Even the lean Western men and hungry Yankees become plump and rosy in this temple of the winds. The high metallic ring of the New England voice is not found in San Francisco. As for old men, California must have been that fabled province of Cathay, the virtues of which were such that whatever a man's age when he entered it, he never grew older by a day.

In regard to the climate of Australia, this same writer says :

The Australians boast that they possess the Grecian climate ; and every young face in the Sydney crowd showed me that their sky is not more like that of the Peloponnesus than they are like the old Athenians. . . . Melbourne is the finest climate in the world for healthy men.

Dr. Guy, in his useful little work, *Public Health*, pub. 1870, speaks of the effect on pop. of the "Combination of temperature, moisture, movement and state of air, which we call weather ; or when we sum up their prevailing character for long periods of time—*Climate*,"—adding :

And every year we have some atmospheric element which neither thermometer nor barometer, neither rain nor wind gauge, nor measure of moisture, nor test of ozone, can reveal to us, *but only our records of sickness and death.* One year it is such as favours small-pox, the next perhaps it will promote scarlet-fever, or measles, or hooping-cough, or it will, so to speak, select from several forms of fever that one which shall fill the beds of our fever hospitals. This condition of air of which disease itself is the only test and measure was once called *pestilence*, but is now known as its *epidemic constitution*. And this, whenever it acts on the pop. with such energy that the disease which it favours affects large numbers of persons, that disease is called *epidemic*. But this *epidemic constitution*, be it understood, is not its true and direct cause, but only its *predisposing cause*. The exciting cause is some poison taken into the body, of which more presently.

The preceding must be regarded as merely an outline of the many ramifications which the subject of Climate assumes. Inquiries were branching out in many directions during the first half of the present century. During the last 20 years the subject has received more rapid development ; and there is now hardly a sea-side or inland health resort in the U K., the peculiar feature of which, in the matter of climate, has not been made the subject of medical investigation, or to which certain remedial qualities are not assigned.

It is the same on the continent of Europe. It is to be hoped that the sufferings of humanity have been or will be relieved in a corresponding degree.

While we are preparing this art. a letter appears in the *Times*, 28th Dec., 1872, from Mr. Robert Rawlinson, C.B., Sanitary Commissioner to the Brit. Gov., whose experience in different parts of the world constitutes him a very high authority. Some of his remarks form a well-timed sequel to what we have already written. Thus :

There are stations in the W. India Islands and in Brit. India where the climate has been reputed so deadly that despair has fallen upon regiment after regiment when ordered to them : and well might this be so, when in years of sickness a moiety of the men sent out have died within the 12 months, and many of those who survived might be described as more dead than alive. After the Crimean exp. the late Lord Herbert caused inquiry to be made both at the barracks at home and abroad, the results being embodied (buried) in despised blue books ; but, fortunately, action has also been taken by carrying out improvements in every part of the world to which Brit. soldiers have to go. What were the facts revealed ? They are briefly described. At some of the W. India stations barracks and hospitals have been built by contract, the contractor finding land and buildings. The cheapest land, being swamps where planters would not house negro slaves, was purchased, or appropriated, and on such sites barracks and hospitals were erected. There was, of course, no sewerage ; the water for drinking was impure, and ventilation was unprovided for. The soldier had no healthful occupation or means of relaxation and amusement, but Gov. provided canteens, to furnish new rum. The "climate" killed men so situated, surrounded, housed, and cared for in this manner, at the fearful rate described. This old story of climate, disease, and premature death is ever told afresh, and appears to the ignorant ever true. Sanitary science, however, tells another story : it does not, indeed, prove that there are not climates which are unwholesome, but it proves by results that the main causes of disease in excess are preventable. Man must look within his dwelling for foul air rather than to the external climate ; he must be more careful both of his food and of his drink, and secure pure water, and take the necessary means to obtain cheerful and moderate exercise, under proper conditions, and at proper times, so as to secure health and strength to enable him to discharge the duties society imposes upon him under the various climates of the world. An Army Sanitary Committee has now been in existence some 10 or 12 years, and there are branch sanitary committees at every Brit. station, whose duty it is to drain, scavenge, and cleanse. Local supplies of water are looked to, analyses are made of waters, not by ones and twos, but by hundreds, and most terrible abominations have been revealed, the water from wells being tainted to the extent of one-third urine, and this decoction has been in use. *In the province of Bombay, in the year 1869, upwards of 1500 human carcases were removed from tanks and wells supplying drinking water to the inhabitants and to the troops.* Fever is, as a matter of course, the scourge of man in such a climate. Cholera, we know, is ever present, and at times in terrible force. The populations of India, west and east, we now know from our inquiries and returns, are living in squalor, misery, and filth indescribable, and Europeans have not, as a rule, adopted any sanitary precautions to avoid these evils, but have added some of their own, as over-feeding and spirit-drinking—and then they blame the climate. [COLD.] [FOREIGN RESIDENCE.] [INDIA.] [TROPICS.] [V. STATISTICS.]

The following terms are used in relation to climate : *Climatic, climatical*—relating to climate ; *climation*, the act of inuring to a climate, like *acclimation* ; *climatize*, to inure to a climate, to acclimate ; *climatographical*, pertaining to climatology ; *climatography*, a description of climates ; *climatological*, pertaining to climatology, climatographical ; *climatology*, which we speak of separately ; and *climature*, climate.—*Worcester*.

CLIMATIZATION [usually designated *Acclimatisation*]. See FOREIGN RESIDENCE.

CLIMATOLOGY, an investigation of the causes which form or modify a climate ; the science which treats of climates.—*Brande*. Many examples of the science of climatology are contained in the preceding art.

CLIPS, HOSE-CLIPS, or SUSPENDERS.—A contrivance for suspending the hose of fire engines upon ladders and elsewhere, to ease the weight of the charged hose when engaged at fires. These were invented by Mr. William Baddeley in 1829.

CLIREHOUGH, WILLIAM PALIN, F.I.A., Man. of *London and Lancashire L.* since its estab. in 1862, he having been founder of the Co. He was one of the founders of the *Lond. and Lancashire Fire*, and its Manager for several years. He was trained to the ins. bus. in the *East of Scotland*, which office he entered in 1845. In 1852 he entered the *National Mercantile L.* as Accountant, and gained considerable actuarial experience under Mr. Jenkin Jones (No. 2). In 1855 he became Sec. of Lond. branch of *Scottish National*. In 1857 he founded the *Queen L.* in Liverpool. In 1858 he founded the *Queen Ins. Co.* (which took over the bus. of the *Queen L.*), of which he remained Gen. Man. until 1862, when he founded the Co. first named. Mr. Clirehough is held in great respect by his professional brethren.

CLÔDE, WILLIAM, for many years Assistant Supt. of Statistical Branch of Reg.-Gen., under Dr. Farr, by whom he is frequently referred to as having been entrusted with the calculation of various important T. from time to time appearing in those reports. During the prevalence of the cattle plague in 1865-6, Mr. Clode was employed by the Lords of the Privy Council to superintend the compilation of authentic statistical returns, which labour he performed with great ability. He afterwards compiled a *Statistical Report of the Cattle Plague in Gt. Brit., from the commencement down to the end of 1866*. This was printed ; but we believe that through the jealousy of some Privy Council official, it was never allowed to be circulated. Mr. Clode was appointed Sec. to the Census Commissioners 1871, and is now fulfilling the duties of that office.

CLOWES, FRANCIS, was Sec. of *Brit. Empire Mut. Fire* from 1854 to 1856.

CLUBS.—See BENEFIT CLUBS ; FRIENDLY SOS.

CLYDESDALE MUTUAL CATTLE INS. ASSO., founded in 1848. The bus. of the Asso. extended to horses as well as to cattle. It was thought that the plan of the Asso. being mut., and therefore "every member having a tangible interest in preventing bad or doubt-

ful stocks being ins., or fraud attempted upon the Asso. in the matter of losses," while accurate information upon every subject with which the Asso. was concerned would be obtained by having "resident directors in every parish in which members reside," would save this Asso. from the too common fate of ins. offices of this class. An early report said :

It must be apparent that a proprietary co. can never possess the same advantages, and so cannot select their risks. Their losses must of necessity, therefore, in proportion be greater. And again, the working expenses of this Asso. are confined to matters only absolutely necessary : there being no paid staff of officers, which in proprietary cos. is indispensable. These circumstances clearly demonstrate that under the mut. system low rates, security, and punctuality of settlement, are procurable.

The early experience of the Asso. appeared to justify this view. In the year 1850-1, the Asso. ins. 1468 head of cattle, 153 horses, and 5 pigs, of the aggregate value of £15,376. In 1851-2 there were ins. 2199 head of cattle, 219 horses, and 3 pigs—total value £22,492. The average ins. value of cattle was £8 per head ; of horses £22 per head ; of pigs £1 10s. The losses in those years were : Cattle, 77 ; horses, 8—giving the per-centage in relation to number ins. : cattle, 3.501 ; horses, 3.653. The rates for cattle were 2½ p.c. ; for horses 3½ p.c. The report for 1851-2 says :

The losses on horses have been considerably less, in proportion to value, than those on cattle ; and the directors therefore recommend that the rates on that class should be reduced to those exigible for cattle, excepting the progressive per-centage in value.

The year 1850 was marked by an unusual number of deaths amongst cattle from *pleuro-pneumonia*, and the directors are of opinion that this year there has been little abatement of that scourge. . . . It will be seen that the per-centage of deaths from that disease is about 2, while from others only 1½. Keeping in view previous exp., it must be apparent that as regards cattle, *pleuro-pneumonia* is most to be feared ; and as that epidemic has appeared among the best stocks, and in the most healthy places, where least expected, agriculturists ought to be impressed fully with the advantages of ins. against such contingencies.

The following is a T. of the diseases of which the *Cattle* died :

Pleuro-pneumonia 45	Wasting 1
Inflammation in calf-bed 5	Diseased liver 1
Murrain 2	„ moniplies, 1
Ruptured blood vessels 2	Dropsy 3
Diseased foot 2	Diseased heart... .. 1
Black leg 3	Stoppage in bowels... .. 2
Inflammation of kidneys 1	Accident 1
Purging 1	
Swelling and burst 6	Total 77

Causes of death of *Horses* :

Glanders 1	Foaling 1
Cancer 1	Accident 1
Inflammation 3	
Diseased liver 1	Total... .. 8

We do not know the ultimate fate of this Asso.

COAL.—A general term for various substances, characterized especially by the presence of carbon, associated with smaller quantities of other matters, gaseous and mineral. The principal varieties of coal are *lignite*, *bituminous*, and *anthracite*.

Coal is one of the most important mineral products of Gt. Brit. It was prob. used by the ancient Britons, but the Romans do not mention the fact at the time of their invasion. Sea-coal was prohibited from being used in and near Lond. in 1273, as being "prejudicial to human health."—*Stow*. Even smiths were obliged to burn wood. Graunt, Petty, and other early writers considered coal smoke as calculated to produce barrenness in a pop. [LONDON.]

The Reg.-Gen. says in his 27th Rep. [returns for 1864] :

Fire is a necessary of life in this climate, and a warm hearth mitigates the severity of winter. Fire is as much required by the poor as the rich ; and a tax on coals, like a tax on salt, presses with undue severity on people of small means. Coal at the pit's mouth costs about 5s. a ton, and anything that facilitates its carriage and distribution in cities, by the abolition of duties and monopolies, or by laying down railways, if it lead to a diminution of cost, *will preserve many lives* that come to an untimely end in such severe weather as has reigned during the last winter months [Jan., Feb., and March, 1864].

These remarks especially apply to the present position of the coal trade, coals being at the present moment [Feb., 1873] at a higher price than has prob. ever prevailed in this country at any former period.

COAL GAS.—Gas for illuminating purposes, produced from coals, as distinguished from that produced from mineral oils, or from the atmosphere. [GAS.]

COAL MINES, DEATHS FROM ACCIDENTS IN.—This subject will be considered fully under MINERS.

COAL MINES, INS. OF.—See COLLIERY INS.

COAL TRADE MUTUAL INS. ASSO. was founded at South Shields in 1813, for insuring maritime cargoes. In 1849 the Asso. took the title of *Coal Trade Eligible Mut.*

COAL TRADE MUTUAL INS. ASSO., founded at South Shields, also in 1813, apparently under the same management as the last-named Co., for the purpose of ins. ships, as distinguished from cargoes.

COALS, STOWAGE OF.—Many ships have been burned at sea from the spontaneous combustion of coals. The Select Parl. Committee on Fire Protection, which sat in 1867, drew the attention of some of the scientific witnesses to the subject. The following is from the examination of Dr. Lyon Playfair, Professor of Chemistry at Edin. :

3058. In what condition are coals most apt to produce spontaneous combustion? When they contain much sulphur, and when they are damp. There is not much fear of spontaneous combustion when they are stowed away quite dry and dusty. 3059. My question refers specially to the shipment of coals. In shipping coal to the East Indies, they are very apt to take fire, are they not? Yes. 3060. What is the cause of that? If there is a slight deviation of temperature the coal has a tendency to take fire. It raises its disposition to take fire from spontaneous combustion very much. There are numerous cases where the temperature has not been above 140° , and the coal took fire, and there are one or two cases where the temperature was not above 120° where the coal ignited. 3061. You say that the coals are more likely to take fire if they are damp? Yes. 3062. If a ship was a little leaky the coals would have a tendency to spontaneous combustion? Yes, if the dampness came into contact with the coal. 3070. The South Wales [anthracite] coal is more free from sulphur than other coals, I believe? Yes, those that are used for steam purposes. I have examined all the South Wales coal for the purposes of the Admiralty, and I have found where they are good specimens they do not contain much sulphur. 3071. Have you anything to suggest to the Committee with regard to ships in loading coal? A fire that takes place by spontaneous combustion in coal almost always commences from one point. Ships should use the simple plan that storekeepers do on land, of keeping iron rods and putting them down in various parts of the coal, and by taking them out and occasionally feeling them, they would know where the elevation of temperature was, and they would be able to cut down to the exact spot and put the fire out before it extended. 3080. Do you think that the spontaneous combustion of coal on board a ship can in any degree arise from friction from the motion of the vessel? No; I think not. [COLLIERIES.]

COAST.—The sea-shore, and the adjoining country; in fact, the sea-front of the land.—*Smyth*. Very important results follow from the degree to which the coast is indented by inlets, bays, gulfs, rivers, estuaries, or other natural interruptions of a straight line; and in proportion as the coast-line of an island or continent is longer as compared with the simplest possible line inclosing the same area, so is their general facility of access, shelter for ships, and a capacity for commerce. The most important trading countries are always those with the longest coast-line.—*Brande*.

COASTING VESSELS.—Vessels engaged in the coasting trade constitute a special class of risk in Marine underwriting. They are not insured for the voyage as are sea-going vessels mostly, but by the year. As a rule, they seek protection from local marine ins. clubs, the managers of which are supposed better to understand the nature of the risks to which they are exposed. There are various legal enactments affecting vessels of this class.

1562. By 5 Eliz. c. 5, no person was to load in any bottom, whereof "any stranger born" is the owner, any kind of fish, victual, wares, or things to be carried coastwise. Repealed.

1793. By 33 Geo. III. c. 2, no ammunition, saltpetre, or gunpowder was to be carried coastwise, on pain of forfeiting the vessel or boat, with all guns, ammunition, furniture, tackle, and apparel. Officers of Customs might seize the same.

1833. By 3 & 4 Wm. IV. c. 52, all trade by sea from one part of the U.K. to another to be deemed coastwise.

1849. By 12 & 13 Vict. c. 29, no goods or passengers to be carried coastwise from one part of the U.K. to another, or to or from the Isle of Man, except in British ships; or from one part of the British possessions in Asia, Africa, or America, to another part thereof, except in Brit. ships.

1854. By 17 & 18 Vict. c. 5, foreign ships admitted to the coasting trade; such ships to be subject to same rules as Brit. ships.

1855. By 18 & 19 Vict. c. 96—Customs Laws Consolidation Act—the last-named provisions re-enacted.

COBB, B. F., Sec. of *Globe Marine* since its estab. in 1870.

COCKER, EDWARD.—The famous arithmetician, born in Lond. in 1631, and died in 1677. The works which most perpetuate his memory were not pub. during his lifetime. His *Arithmetic* was first pub. in the year of, but after, his death. The 40th ed. was pub. 1723. Many eds. have since appeared; and "according to Cocker" has become a proverb in matters of calculation.

In 1684 was pub. *Cocker's Decimal Arithmetick, wherein is shown the Nature and Use of Decimal Fractions in the usual Rules, and the Mensuration of Planes and Solids, together with Tables of Interest and Rebate for the Valuation of Leases and Annuities, present or in reversion, and Rules for calculating those Tables; whereunto is added his Artificial Arithmetick, showing the Genesis or Fabrick of the Logarithms, and their Use in the Extraction of Roots, the Solving of Questions, in Anatocism and in other Rules in a method not usually practised; also his Algebraical Arithmetick, containing the Doctrine of Composing and Resolving an Equation, with all other Rules requisite for understanding that mysterious Art, etc.*, composed by Edward Cocker. Perused, corrected, and published by John Hawkins, writing master at St. George's Church, in Southwark.

In the preface is the following :

In 1677, I pub. Mr. Cocker's *Vulgar Arithmetic*, therein promising the speedy printing of his *Decimals*, etc.; but other extraordinary circumstances occasioned its not seeing the light till now. By the vulgar art learners may be qualified for the ordering of bus. in the greatest concerns of trade and commerce; and for such ingenious souls, whose fancies lead them to a further scrutiny of arts mathematical, was this treatise composed, which will lead them, without any other guide, into the con-

templation of more sublime speculations, an inheritance entailed only upon the industrious sons of art. Therefore, courteous reader, if thou intendest to be a proficient in the mathematics, begin cheerfully, proceed gradually, and the end will crown thee with success. Cry not out at difficulties, *ne plus ultra*, for diligence will overcome them all.

The 6th ed. was pub. in 1729. It is dedicated to the Right Worshipful Sir Peter Daniel and Peter Rich, Esq., Aldermen of the City of London, and Thomas Lee and James Reading, Esqs., Justices of the Peace.

In the *Vulgar Arithmetic* there is a page recommendatory, declaring, on the faith of the witness, that Edward Cocker was studious and accomplished in the mysteries of numbers and algebra, of which he had a great collection of choice MSS. and printed treatises in several languages, and that his arithmetic was worthy of all acceptance.

Ingenious Cocker ! now to rest thou'rt gone,
No art can show thee fully but thine own !
Thy rare arithmetic alone can show
The vast *sums of thanks* we for thy labours owe.

COCKREL, J., was Man. of *Aberdeen Marine* about 1844.

CODE.—A collection or system of Laws. "The Code" is a designation frequently applied to the Code of Justinian on account of its eminence. [CODEX JUSTINIANEUS.]

CODE NAPOLEON.—The Code so designated constitutes the Civil Law of France. In 1800 the first Napoleon directed a commission of eminent jurists to frame a code of laws for the kingdom. A draft was completed by 1801, but the Code was not finally adopted until 1804, and it was then designated "Code Civil des Français." When Napoleon became Emperor, the name was changed to that of "Code Napoleon." Other codes have since been formed, making the number of codes six in all—but these are very often, although erroneously, spoken of as the "Code Napoleon." All such parts of the Code as relate to Ins. will be spoken of under the proper heads. [ACCIDENT.] [F. INS.] [FRANCE.]

CODEX.—A roll or volume ; also a code, as the *Codex Justinianus*, etc.

CODEX JUSTINIANEUS.—The Code of Justinian. In Feb. of the year A.D. 528 the Roman Emperor Justinian I. appointed a commission consisting of 10 persons to make a new collection of imperial constitutions. The commission was directed to compile one code from those of Gregorianus, Hermogenianus, and Theodosius, and also from the constitutions of Theodosius made subsequently to his code, from those of his successors, and from the constitutions of Justinian himself. The Code was completed, but within six years after its pub. it was suppressed as imperfect, and replaced by a new ed., technically known as the *Codex Repetitæ Prælectionis*, which is in fact "the Code." It is divided into 12 books ; each book into titles, and each title into laws. The fourth and eighth books treat more particularly of matters coming within our present scope, as Contracts ; Novation ; Usury. [CIVIL LAW.]

CODEX VISIGOTHORUM.—A Code of laws promulgated by the Visigoths, while in possession of Spain, after the fall of the Roman Empire of the West. This Code is still held in estimation in Spain under the denomination of *FUERO JUZGO*. In this Code we find nothing relative to maritime commerce, *except the earliest testimony of the right granted during the middle ages to seafaring strangers or foreigners of being judged by the magistrates and arbiters of their own nation, and according to their own laws.* From this Pardessus infers that the countries from which these foreign navigators came, and which could be no other than the south of Gaul, Italy, and the Greek Empire, had maritime laws or usages formed from the remembrances and traditions, if not from the documentary records, of the Roman law.—*Reddie*. [CONSULAR COURTS.]

CODICIL.—A supplement to a will, containing anything which the testator wishes to add, or any explanation or revocation of what the will contains.

CODIGO DE LAS COSTUMBRES MARITIMAS.—A work pub. by Capmany in 1791, being a collection of the maritime laws of Barcelona, Valencia, etc. [BARCELONA.] [SPAIN.]

CODNER'S ASSURANCE.—Under this title was projected, during the South Sea mania, 1710-20, a co. having the avowed purpose of *Insurance against Lying*. How far it succeeded in its laudable object, and what was the precise nature of the risk to be undertaken, does not appear. A form of proposal and a pol. of this Co. would be of the utmost interest ; but, alas ! they are not forthcoming.

COLD.—A popular name for catarrh, derived from its cause rather than its symptoms.

COLD [Temperature].—Cold, like heat, exists in all bodies. It is indeed said by scientific men that cold has only a negative sense, implying a greater or less privation of heat. The ancient writers frequently speak of *cold* as typical of death, while *heat* is designated as the principle of *life*. We do not intend to enter upon such debatable ground. That cold in a certain sense is inimical to life has long been observed, *vide* Shakspeare in *Henry VIII.* :—"The third day comes a frost, a *killing* frost." The effect of cold upon the human system is shown in the most direct form by the large increase of deaths (chiefly from diseases of the respiratory organs) in the more inclement seasons.

We believe the first writer who called scientific attention to this fact was Heberden the younger, who compared the mort. from all causes in the first 5 weeks of 1795 with that of the same 5 weeks in 1796. The temperature in 1795 ranged between 23° and 29° ; in 1796 between 43° and 50°. In 1795 the total deaths were 2823 ; in 1796, 1471—or nearly twice as many in the cold as in the mild winter. How fatal this cold was to aged

persons may be inferred from the fact that while the cold weeks of 1795 destroyed 617 children under two years old, and the warm weeks of 1796, 506, or 6 deaths in the first to 5 in the last; the deaths above 60 were 717 in the cold year, and only 153 in the milder one, or something approaching 5 to 1. Comparisons between cold and warmer weeks of the same year yielded similar results. His obs. were based upon the London B. of Mort.

The most intense cold ever recorded in Lond. was on the 25th Dec., 1796, when the thermometer was 16 degrees below zero. On the 3rd Jan., 1854, the thermometer marked 4° below zero, Fahrenheit; on 25th Dec., 1860, it fell in some parts of England to 18°, in others to 15°, below zero; at Torquay, Devon, to 20° below zero. The cold was excessive for several days before and after that date. In Jan., 1864, the cold was very severe. On 4th Jan., 1867, the thermometer stood at 3° below zero at Hammer-smith and Hornsey [suburbs of London]; on 7th Jan. following at 55° above. [CLIMATE.]

Sir Henry Hallford, an eminent physician of the present century, in his well-known brilliant essays, delivered in Latin, and pub. in 1831, included one "*On the Effects of Cold.*"

The Reg.-Gen., in one of his quarterly R. for 1864, said:

When the thermometer falls to the freezing-point of water, the mort. is raised all over the country; and the pop. of Lond. is excessively sensitive to cold; thus the corrected *average* deaths of the 2nd week of Jan. are 1550, but the *actual* number of regis. deaths this year was 2427. The mean temperature of the preceding week, instead of 37°·8 had fallen to 26°·7; and the temperature of one chill night [Thursday, 7th Jan., 1864] had descended to 14°·3, or to 17°·7 below the freezing-point of Fahrenheit; and 877 lives were extinguished by "*the cold wave of the atmosphere.*" The excess of the rate of mort. during the months of Jan., Feb., and March, 1864, was '228 in the country districts and small towns; '284 in the large town districts, exclusive of Lond.; and '511 in Lond. *above the average.*

The Reg.-Gen. for Scotland, in one of his reports a few years since, said the descent of temperature below freezing-point in Scotland caused "*a greater increase in deaths than the most deadly epidemics to which the inhabitants are liable.*" [HEAT.] [TEMPERATURE.]

COLE, GEORGE, was Sec. of *Birkbeck* in 1852.

COLEMAN, J., was Joint Sec. of *Norwich Mut. Marine* during its short career—1846–54.

COLES, JOHN, Stockbroker, was trained to L. ins. bus. in the office of the *Legal and Commercial*, which he entered in 1850. He passed into the *Victoria Life* on the amalg. of the *L. and C.* with that Co. in 1859, and he retired from ins. pursuits in 1863.

In 1857 he contributed a letter to the *Assu. Mag.*, *On the Method of Valuing Whole-term Assu. on Single Lives by Classification.*

In 1868 he read before the Inst. of Act. a paper: *Railway Debenture Stock considered as a Security for the Investment of the Funds of a Life Assu. So.* This is a practical and useful *résumé* of the facts and considerations relating to the subject.

COLIC (scientifically *Colica* [or *Kolica*], from the Greek, signifying the colon).—A painful contraction of the muscular coat of the colon, without inflammation or fever. It has various sub-distinctions among medical practitioners, implying the cause of the ailment. Then there are several popular distinctions, as Devonshire colic, painters' colic, etc., etc. Colic was termed by Sydenham, and other old English writers, the *Dry Belly-ache*.

COLLAPSE (from the Latin *collapsus*, a falling together).—Prostration, or shock to the nervous system; interruption of the powers and actions of life, immediately following any severe injury.—*Hoblyn.*

COLLATERAL.—Indirect, sideways, that which hangs by the side; as "collateral security"—something added to or placed alongside the chief or orig. security.

COLLECTANEA MARITIMA, being a collection of public instruments, etc., etc., tending to illustrate the Hist. and Practice of Prize Law, by Chr. Robinson, London, 1801.

COLLET, THOMAS WILSON, Sec. of the St. Katherine Docks, gave evidence before the Select Parl. Committee on Fires in the Metropolis, in 1862. The substance of his evidence will be found under **DOCKS**. He explained to the Committee that in the event of a fire the Dock Co.'s certificate was the only document upon which the merchant or owner could recover from the ins. office. [CLAIMS, *Fire.*]

COLLIER, NOAH, was Sec. of *Consolidated* during the years 1850–53.

COLLIERIES, ACCIDENTS IN.—Under this head may be classed two descriptions of casualty, viz. (1) loss of life to the workmen; and (2) damage to the mine by explosion or otherwise. The former we shall treat of under **MINERS**; the latter under **COLLIERIES**, **EXPLOSIONS IN**, and **COLLIERIES**, **INS. OF**.

COLLIERIES, **EXPLOSIONS IN**.—Explosions in collieries are caused by reason of the **FIRE-DAMP**, to which coal mines in some districts of Gt. Brit. are peculiarly liable, coming into direct contact with flame. The peculiar merit of the miner's lamp, invented by Sir Humphry Davy, is that while it furnishes light sufficient for the purposes of the miner in his work, it prevents, so long as it is kept properly closed, the contact of fire-damp with the flame. But the miners, prob. from the want of correctly understanding the principle of the lamp, disregard all injunctions regarding its use; or if this be rendered impossible by the vigilance of the overseers, they introduce light by other means, as by igniting lucifer matches for the purpose of smoking, and hence, from time to time, arise those serious casualties to property, as well as life, to which collieries are still, although not necessarily so, subject.

Much scientific attention has of late been drawn to the subject of colliery explosions; and it is found that nearly all serious casualties from fire-damp have arisen when great

depression of the barometer has been observed. At such times there is considerable difficulty in obtaining proper ventilation, and as a rule a more than ordinary amount of air should be sent down into the mines. The managers, especially in very gaseous pits, should take care that this precaution is attended to, the neglect of which, under the circumstances indicated, is almost criminal. The terrible accidents at the Oaks and Talk-o'-the-Hill collieries in 1866 happened after a sudden fall of the barometer. On the 10th of Dec. the mercury stood at 30'40; on the 11th there was a fall of nearly one inch, and that fall continued till the 13th. During that interval the explosions at the above-named collieries occurred.

It is believed that these variations in the pressure of the atmosphere occur periodically; and as they are always immediately indicated by the barometer, the most simple test is ready at hand. Mr. G. J. Symons, in a letter quoted in the *Times*, 21st Jan., 1873, said that on the 12th of Feb., 1866, he reported that at 4'30 P.M. on the previous day the barometric pressure at his station, reduced to sea-level, was only 28'606 in. In 1872 he had similarly to report an even lower reading—viz. 28'332—at 4'47 P.M. on the 24th of Jan. He now adds a few data respecting the depression of Sunday (19th Jan., 1873), which was greater than any except that of 1872. Before doing so, however, he calls attention to a fact which is either a singular coincidence, or, perhaps, something of more importance. The interval between the first two depressions is, roughly, six years, accurately 2173 days, which, divided by the six years, gives 362 days and an hour or so; and the interval between the depression of 1872 and that of Jan. 20, 1873, is almost the same. It seems to him remarkable that, out of a series of obs. extending over 16 years, three out of the four lowest points fall into a regular period; but he is far from asserting that it is more than a coincidence.

Messrs. Negretti and Zambra, in the same issue, call attention to the very low state of the barometer, which, within 48 hours, had fallen nearly 1½ inches, "indicating a change of atmospheric pressure which may be called almost unprecedented." They remark that an enormous amount of gas must have escaped during this time, and that mines in which fire-damp exists, and which would be perfectly safe with the barometer at 30, are now highly dangerous. They add that an Act was passed for compelling proprietors of mines to have a barometer, but that it unfortunately cannot compel miners to be cautious, or even to look at the barometer. Perhaps it may be due to this timely warning that no serious colliery explosion has occurred on this occasion.

The following are the lowest readings since January, 1857 :

Year.	Month.	Hour.	Reduced to Sea-level.
1859	December 26	6 A.M.	28'629 in.
1868	February 11	4'30 P.M.	28'606 in.
1872	January 24	4'47 A.M.	28'332 in.
1873	January 20	1'0 A.M.	28'447 in.

It is in this manner that scientific observation and research is coming to our aid in practical every-day life.

Mr. H. W. Porter, B.A., in his obs. on the Reports of the Reg.-Gen., 1860, speaking of the number of persons annually killed by explosions, etc., in coal mines, says :

A great proportion of these accidents—prob. the whole number caused by explosions—may be considered to be preventible; and that this is the fact may be fairly assumed from the circumstance of the death-rate in different mines varying considerably, according to the precautions taken in each. [COLLIERIES, INS. OF.] [FIRE-DAMP.] [MINERS.]

The following is a list of the principal colliery explosions in Gt. Brit. of which we can obtain any record at the present moment :

1857—Feb. 19th, Lund Hill, near Barnsley; 180 miners perished. The discipline of the pit had been very lax.

1858—A number of explosions occurred. The chief were at Bardsley, at Duffryn [near Newport, Mons], and at Tyldesley, near Leeds.

1860—March 2nd, Burradon, near Killingworth; 1st Dec., Risca, near Newport, Mons; 22nd Dec., Hetton, Northumberland.

1862—Feb. 19th, Gethin, near Merthyr Tydvil; 22nd Nov., Walker, near Newcastle-on-Tyne; 8th Dec., Edmund's Main, near Barnsley.

1863—March 6th, Coxbridge, near Newcastle; 17th Oct., Margham, S. Wales; 26th Dec., Moestig, S. Wales.

1865—3rd May, Claycross; 16th June, New Bedwelty pit, near Tredegar, S. Wales; 20th Dec., Gethin, Merthyr Tydvil.

1866—Jan. 23rd, Highbrook, near Wigan; 14th June, Dunkinfield, near Ashton; 31st Oct., Pelton Fell, near Durham; 12th Dec., Oaks colliery, near Barnsley [350 miners killed]; 13th Dec., second explosion in same pit [28 searchers, including Mr. Parkin Jeffcock, mining engineer, killed]; 13th Dec. also, Talk-of-the-Hill, Staffordshire.

1867—27th Aug., Garswood colliery, near St. Helens; 8th Nov., Ferndale, Rhondda Valley, near Cardiff, about 178 lives lost. Attributed to naked lights.

We regret that we cannot supply the data for a more complete T. It seems clear that a more perfect set of obs. would at once indicate the most dangerous districts, as well as the most dangerous periods of the year. December claims a fatal pre-eminence in the above list; and this is in accordance with the scientific obs.

The Inspection of Collieries was provided for in 1850 by 13 & 14 Vict. c. 100. New provisions were introduced in 1855 by 18 & 19 Vict. c. 108; and again in 1860 by 23 & 24 Vict. c. 151. By 35 & 36 Vict. c. 76 (1872), the regulations of the preceding measures are amended, and boys are prohibited from working in collieries. An Act rendering it incumbent upon colliery proprietors to provide duplicate shafts was passed in 1862.

COLLIERIES, INS. OF.—The liability of Collieries to explosions and other casualties has naturally drawn the attention of owners, occupiers, and others to the question of ins. in relation to risks of this character.

The first attempt of this kind of which we have any knowledge occurred in 1858. There had been about that period a continued series of casualties beyond the average in severity. A number of gentlemen in one colliery district conceived the idea of ins. as a matter of individual protection. They wanted the ins. not only to cover damage resulting to the colliery itself and the adjacent works; but also to take the risk of providing for the widows and families of the workmen injured.

The present writer was called in to advise. After an exhaustive investigation of the whole subject, so far as the information could be obtained by means of the reports of various Parl. Commissions, and from the ann. reports of the inspectors of collieries, the Board of Trade returns, etc., he felt compelled to advise against the project. The principal considerations leading to this determination being:—(1). The necessarily heavy amount of the individual risks—*i.e.* in a large colliery in full work an ins. of less than from £5000 to £20,000 being regarded as hardly of any protection. (2) The aggregation of risks in an individual colliery—for the more severe the injury to the works, the more likely would be a large sacrifice of human life. (3) Only certain districts of Gt. Brit. are subject to explosions from fire-damp; hence the owners in other districts would not ins., and finally (4) the same atmospheric influences which rendered explosions probable would affect all the collieries in a given district, and indeed all the dangerous districts, *at one and the same time*. These reasons could not be rebutted, and the project then fell through.

It was of course pointed out that so far as the workpeople themselves were concerned, they were not wholly left without protection, as friendly sos. and accident ins. cos. were open to them, although unhappily these were too often not made available.

Subsequent attempts have been made in the same direction. We propose to notice these briefly, and to place on record the leading statistics adduced.

In 1865 a return was prepared showing that there were 3268 collieries in the U.K., employing 307,542 miners, who produced 98,150,587 tons of coal, valued at the pit's mouth at £24,537,646.

In 1866, after the disaster at the *Oaks* Colliery and several others had drawn marked attention to the subject, Mr. Lonsdale Bradley introduced the question of ins. by means of several able letters in the *Times*. He said that the main difficulty he and others had felt was in reducing the risk to a proper average. But prosecuting his inquiries over a long period, and carefully examining all the conditions that lead to the loss of life and property in coal mines, he had ascertained that such a recurrence of accidents prevailed as indicated the operation of a law uniform in its action, when spread over a long period.

He said he had ascertained that there were annually, from all causes, not less than 900 accidents, involving loss of life to about 1000 colliers. He had endeavoured to ascertain the pecuniary cost of the injury from explosions, fires, fall of roofs, inundation, and breaking of machinery, and believed he had succeeded in doing so.

1. Cost of Accidents to Property.—In one of the most dangerous districts of the kingdom there had occurred in 16 years accidents by explosion costing £56,914; these ranged from £200 to £25,000 each. This, supposing all collieries to be equally fiery, would give £910,624 as the loss sustained in 16 years. This would give £28,457 a year, which is greatly in excess of what would be the actual loss sustained. It is quite safe, therefore, to make the following estimate:

62 explosions	...	...	...	...	...	...	£26,000
395 falls of roof, £10 each	...	...	...	...	...	...	3950
140 shaft accidents, £50 each	...	...	...	...	...	...	7000
122 miscellaneous, £50 each	...	...	...	...	...	...	6100
Accidents without loss of life	...	...	...	...	...	...	20,000
Total cost							£63,050

It had next to be considered what was estimated as the value of the property upon which this loss annually falls, and the provisions by which it may be equitably ins. There were in the U.K. 3180 collieries. They were valued as follows:

50 valued at £100,000 each	...	...	...	...	...	...	...
300	50,000	...	...	...	...	...	...
600	30,000	...	...	...	...	...	...
700	20,000	...	...	...	...	...	14,000,000
750	15,000	...	...	...	...	...	11,250,000
780	7000	...	...	...	...	...	6,750,000

3180 collieries, valued at £70,000,000
Giving an average of £22,000 as the value of each colliery.

Again, accurate returns from one of the more dangerous districts show that among 418 collieries there occurred in 16 years : Underground fires, costing £22,700 ; inundations, £2700.

2. *Loss of Life in Collieries.*—The result of an examination of the official returns on the subject shows that the average number of accidents, involving the loss of life, occurring each year is : 62 explosions ; 395 falls of roof and coal ; 140 accidents in shafts ; 122 miscellaneous accidents in the pit ; 55 accidents at surface ; 77 from similar causes in ironstone pits : total accidents involving loss of life, 851.

In 1869 Mr. Stephen Sleight addressed a letter to the *Times*, on the practicability and safety of applying the ins. system alike as regards life and property to the case of colliery accidents, wherein he said :

Owners and occupiers of collieries have long felt the want of an inst., formed on sound and equitable terms, which would give increased security to capital invested in the extraction of coal, and which should include provision for the sufferers from accidents in the collieries.

Asso. for securing individuals from losses produced by accidents beyond their own control now form an essential part of our social system. Yet there is one description of property having a value which has been carefully estimated at from £100,000,000 to £150,000,000 stg., and which adds ann. to our national wealth nearly £30,000,000, and gives employment to more than 300,000 coal miners, which has not hitherto been secured from loss either of property or life by any system of ins.

Colliery accidents were often of so startling a character, and so irregular in occurrence, that every one supposed a coal mine to be entirely removed from the operation of such protection as in other cases the system of ins. afforded. Data have, however, been collected during the last 15 years, on which the most perfect reliance may be placed, which demonstrate the interesting fact that colliery ins. admits of being practised with as much certainty and with greater profit than attends the assu. of an ordinary life or of a ship at sea.

An examination of the conditions which lead to the injury of property in coal mines, and the loss of life among colliers, has been completed. Returns, collected with great care by gentlemen especially qualified for the task, have furnished data upon which an estimate of the average cost of accidents to colliery property has been obtained. Tables, constructed from these sources, show that a recurrence of accident prevails uniform in its action when spread over a long period—the law of “averages” prevailing in this as in every other division of human casualty—and, therefore, capable of being provided against by ins.

The statistics already given are here referred to. The following are the specific advantages to be secured :

In its operations colliery ins., when estab., would secure the wealthy owner against inconvenience and the small proprietor against ruin. It would make coal property a security for loans, and enable a struggling proprietor to borrow money for the extension or improvement of his works.

Supposing a colliery proprietor to ins. his colliery, he would be able to secure to himself payment for damage to his property arising from explosion, inundation, fire, or other casualty, and to make provision for the widows and children of men perishing by accident in the colliery.

An ins. on the life of the miner would also tend to fix him in his locality, and thus enable means to be taken for the instruction of his children. At present the coal mining pop. is essentially a vagrant one, moving from pit to pit, and from one coal district to another. Under the influence of a system which provides him with future guardianship, he will in most cases continue to dwell in the scene of his home and labours, and in that permanency of dwelling place to allow means to be taken for the social regeneration both of himself and his family.

In providing for “the widow and the fatherless,” colliery ins. would put an end to those appeals to public charity which, however nobly answered, do little more than ameliorate present want.

The prob. rate of prem. for colliery ins. is next considered.

A prem. of $\frac{1}{2}$ p.c. (10s. for each £100 ins.) would produce upon £70,000,000 the sum of £350,000. Supposing the co. ins. one-fourth only of the collieries thus estimated, £87,500 would be ann. obtained ; and supposing the co. had every one of the dangerous collieries, and the whole of the accidents, £63,000 is all that would have to be paid, leaving £24,500 to meet int. on cap. and all incidental charges. Even in extreme cases which are not likely to occur in the course of any one year, a large amount would therefore be left as profit on the transactions.

Suggested rates of prem. per cent.—Class 1.—Nottinghamshire, Leicestershire, Warwickshire, Scotland, E., Derbyshire. Average, 6s. 3d. ; for pits in non-fiery districts. Class 2.—Lancashire, N.E., North Stafford, South Stafford, Cheshire, Worcestershire, South Durham, Scotland, W. Average, 10s. ; for pits in occasionally fiery districts. Class 3.—Lancashire, W., North Wales, North-west Yorkshire, North Durham, East Cumberland. Average, 13s. 9d. ; for non-fiery pits in fiery districts. Class 4.—North Durham, Northumberland, Cumberland, Monmouthshire, Gloucestershire, Somerset, Devon, South Wales, South-west Yorkshire. Average, 27s. 6d. ; for fiery pits in fiery districts.

Finally, we have the proposed rates for ins. of the colliers :

There are killed ann. 1000 colliers. According to the inspector's returns there are in the U.K. 307,540 colliery miners. At 2d. p. week, or 8s. 8d. p.a., supposing all those individuals were made to contribute that sum, or that the coal-owners insured the lives at the rate of £43 6s. a year for each 100 of those employed, £130,000 would be produced each year. The number killed being actually 1000, supposing each man to leave a widow and children—not more than one-half would do so, but probably they would leave mothers or sisters who were dependent on them—then £100 might be given to each, with an expenditure of £100,000, leaving an excess of £30,000.

In 1871 a scheme for a Colliery Ins. Co. was completely developed, and put forward, with a directorate composed of gentlemen practically conversant with the bus. The advantages of the project were thus tersely enumerated :

1. Indemnity against loss by accident will, on its recurrence, relieve colliery owners from inconvenience, and some from stoppage of works. 2. Ins. will in all cases give increased value to coal properties as securities for loans, which may be wanted for the extension and improved working of pits, but which, coal properties being uninsured, are not readily, if at all, obtainable. 3. Ins. will add considerably to the market value of coal mines, raising it in many cases from 5 to 10 or more years' purchase. 4. Ins. of individual interests in collieries will enable partners and shareholders to protect themselves from loss resulting from accidents. 5. Ins. of the colliers' lives against fatal accidents in the pits will antidote a large amount of misery, which the public, in answer to “charitable appeals,” can do little more than very partially alleviate.

The aid of Dr. Farr had, we believe, been called in by the promoters. A letter of his appeared in the prospectus, wherein he says :

I fully concur in the opinion that the ins. of the collieries of this kingdom would be of great benefit to the colliery int., and to the kingdom at large, by distributing losses over wide areas of such property, and thus preventing disastrous losses to individuals or firms. I think ins. as applicable to collieries as it is to other property.

Mr. Robert Hunt, of the *Mining Record* office, said :

I am convinced that a system of ins., judiciously organized, would be a means of relieving much of the distress which ever attends a colliery accident, and that the proprietors of coal mines would find it to be greatly to their interest to avail themselves of the advantages offered, as by them the burden of anxiety would be removed, and the fear of loss withdrawn.

Other practical men wrote in favour of the project ; but, as we shall presently see, with all this influence, it did not go forward.

Colliery Ins. yet remains an enterprise for future development.

COLLIERY INS. CO., LIM.—This Co. was founded in 1871, with an authorized cap. of £1,000,000, in 100,000 shares of £10 ; first issue not to exceed 50,000 shares.

The chief objects of the Co. are: (1) the ins. of owners or lessces of collieries against loss in the collieries from explosion and fire ; (2) the ins. of individual interests when the colliery as a whole is not ins. ; and (3) the ins. of provision for widows, children, and dependent relatives of colliers killed by accidents in collieries.

The prospectus sets out the following facts :—“ 1. The property in British collieries is valued at 160 millions, and the coal raised adds annually to the national wealth more than 30 millions sterling. 2. There are upwards of 3000 collieries, and on an average accidents happen to one-third annually. 3. The colliers employed in the British collieries number more than 300,000, of whom upwards of 1000 perish ann. by accidents in the pits. 4. But neither the property in British coal mines nor the lives of British colliers are at present protected under any system of ins.” And then proceeds :

The public have, therefore, for many years felt the want of an inst. for the ins. of capital invested in collieries, and for the ins. of colliers' lives against casualties arising from pit accidents.

The apparent irregularity and uncertainty of colliery accidents, and the destructive nature of many of them as regards life, have led some persons, unacquainted with the subject, to consider this class of property to be beyond protection by a system of ins. The experience of the last 20 years, however, has demonstrated the fact that colliery ins. may be practised with as much certainty and success as attends any of the ordinary forms of marine, fire, and life ins.

Collieries are properties as accurately planned and as accessible as any manufactories insured against fire, and damage to their works is as readily ascertained.

The Colliery Inspectors' Ann. Rep. to Government furnish reliable data of accidents and loss of life ; and returns, collected by gentlemen qualified for the task, give the pecuniary cost of all colliery accidents. Tables constructed from these sources show a recurrence, within given limits, of accidents uniform in number and results, and therefore capable of being provided for by a system of ins.

Graduated prems., calculated upon like principles to those which regulate ordinary ins., prove that an income will be obtained from colliery ins. fully sufficient to cover liabilities and to give very liberal profits to the shareholders of the Co.

General rates have been carefully determined for the coal districts of the U.K., but as collieries differ from one another in respect of physical conditions and modes of working, so the general rate of a district will be modified according to the special circumstances of each colliery.

A general inspection of the collieries under ins., for the private information of the Co., will be carefully maintained. The supervision thus exercised will be a reliable support to the colliery proprietor, and give that protection to the colliers which they will never, perhaps, be able, by legislative enactment, to obtain.

In estab. an office for the ins. of property and life in the collieries of Gt. Brit., this Co. will enter on its bus. with undeniable prospects of success. No single ins. office deals, in actual practice, with one-tenth of the amount of bus. which this Co. will undertake, and it has no competitor.

The cap. of the Co. is amply sufficient for all contemplated purposes. A larger amount, while it diminished dividends, would not add to the power of the Co.

The enterprise was launched under the authority of gentlemen of position and influence. Dr. Farr was announced as at the head of the actuarial department ; Mr. Robert Hunt as at the head of the mining and mineral department. The press gave it a good reception. But those practically engaged in colliery enterprise failed to realize the advantages offered, and the project has met with only a limited measure of success. It was part of the scheme to estab. local boards in the mining districts. Mr. Stephen Sleight was promoter, and Sec. *pro tem.*

COLLINGRIDGE, AUGUSTUS.—A great promoter of Ins. Cos. of a doubtful class, some twenty years since. The *Past Mag.* exposed the man and his doings successfully. The following is a list of the chief of the cos. promoted by him :—(1) *Merchant Traders Ship*, 1845 ; (2) *General Shipping and Freight*, name afterwards changed, and founded as *General Commission Ship Loan*, 1846 ; (3) *Port of London Marine*, 1847, of this he was Managing Director ; (4) *Sea, Fire, Life*, 1849, of which he was Man. ; (5) *General Freight Assn.*, also 1849. There were probably several others in which his name did not prominently appear. The history of each of these projects will be given in its alphabetical place. [It seems only fair to state, as the name is an unusual one, that this gentleman was in no way associated with the respected owners and pub. of the *City Press*.]

COLLINS, DIGBY, was Sec. of *National Horse Ins. Co.* during its brief career.

COLLINS, FRANK H. L., Ins. Broker, 82, Cheapside, was trained to ins. bus. in the *Legal and Commercial*. About 1853 he was appointed Man. of city branch of *Unity Fire*. He was for a short time Sec. of that Co. In 1860 he became Sec. of *Whittington*, in which

position he remained until 1864. Mr. Collins is one of the very few who have estab. a successful bus. as a F. ins. broker in Gt. Brit. In the U.S. there are many such.

COLLISION [French *Abordage*].—In a general sense Collision is the act of any two or more bodies coming forcibly together; but in navigation it means the shock of two ships coming into sudden and violent contact at sea, by which one or both may be more or less injured.—McCulloch's *Dict. of Commerce*.

COLLISION [or **RUNNING DOWN**] **CLAUSE**.—The object of this clause in marine ins. pol. is to afford some relief to shipowners in respect of their liability under the "Merchant Shipping Acts," for loss or damage occasioned by the improper navigation of their vessels—and which is not covered in the ordinary form of pol. That liability is fourfold, and arises from the following casualties—1. Loss of life, or injury to any person on board of the defaulting ship. 2. Loss or damage to goods or effects on board of the same ship. 3. Loss of life or injury occasioned to any person on board of the other vessel. 4. Loss or damage caused to the other vessel herself, or to any goods or effects on board of her.

The amount of damages recoverable against the shipowner under all these heads taken together is limited to a sum equivalent to £15 p. regis. ton in the case of sailing ships, and £15 p. gross ton in the case of steam ships; but in respect of loss or damage to ships, boats, goods and effects, it is limited to £8 p. corresponding ton. It is in respect of this latter only that the "Collision Clause" comes in; and even here it only ins. up to *three-fourths* of the value of the loss sustained. The first three heads are ignored altogether. "It is evident (says Mr. McArthur, who treats the subject very ably) that this contracted system of compensation is inadequate to the real wants of the case. It has led to the formation of Shipowners' Protective Asso., and other kindred sos. created to fill up the gaps in the pol. of ins., as well as to gather the golden grain that the underwriters let fall."

There are several varieties of this clause in use, but the following may be regarded as the standard form, as adopted at Lloyds, after communication with the Liverpool Underwriters Asso. and the Salvage Asso.:

And it is further agreed that if the ship hereby ins. shall come into collision with any other ship or vessel, and the insured shall in consequence thereof become liable to pay, and shall pay to the persons interested in such other ship or vessel, or in the freight thereof, or in the goods or effects on board thereof, any sum or sums of money not exceeding the value of the ship hereby assu., calculated at the rate of £8 p.t. on her regis. tonnage, we will severally pay the assured such proportion of three-fourths of the sum so fixed as our respective subs. hereto bear to the value of the ship hereby assu., *calculated at the rate of £8 p.t.*, or if the value hereby declared amounts to a larger sum, then to such declared value, and in cases where the liability of the ship has been contested with our consent in writing, we will also pay a like proportion of three-fourth parts of the costs thereby incurred or paid: provided also that this clause shall in no case extend to any sum which the insured may become liable to pay or shall pay in respect of loss of life or personal injury to individuals from any cause whatever.

Mr. McArthur enumerates the following heads of liability attaching to the owner, which are not reached by the "Collision Clause." 1. Loss of life or injury to persons in the defaulting ship. 2. Loss of life or injury to persons in the other vessel. 3. Loss or damage to goods and effects on board the defaulting ship. 4. One-fourth of the damages and costs as deducted under the Collision Clause. 5. Damages assessed by a foreign tribunal in excess of £8 p. ton. 6. Loss or damage occasioned by improper navigation without actual contact. 7. Damage to piers, jetties, etc. Adding:

It is not asserted that all these excepted risks should be borne by underwriters. Some of them, especially such as relate to loss of life and personal injury, have been long considered foreign to the contract of marine ins.; and it has also been deemed expedient that the shipowner, by sharing the penalty, should have an interest in preventing, as far as possible, the occurrence of collisions. How far these opinions are correct is a question open to consideration; but it may safely be affirmed, that if marine ins. is to fulfil its mission, the "Collision Clause" must be revised in a liberal spirit.

COLLISIONS [OF SHIPS], **GENERALLY CONSIDERED**.—From the foregoing it is seen that the subject of Collisions presents itself in many aspects before the underwriter. We can but deal with the question in a somewhat general form here. There can be no doubt that from the great increase of navigation in certain beaten tracks, the risk of accident from collision has been very considerably increased. The practical aspect of the subject ranges itself mainly under two heads:—1. The measures to be adopted to prevent the occurrence of collisions. 2. To determine by whom the loss, when collisions do occur, is to be borne. The remarks we have to make, and the writers we have to quote, generally range themselves under one or other of these two heads.

At Common Law every master of a ship is bound to keep a proper watch at sea—especially in channels much frequented by shipping; and to use every precaution to avoid coming into contact with other vessels. But this matter has been judged too important to be left wholly to depend on the good sense and care of individuals; and with a view to the securing of attention to the subject, and to the obviating the confusion that would unavoidably arise were ship masters left to follow their own ideas respecting it, rules and regulations have been laid down with respect to the courses to be steered when ships are passing each other, the signals to be made during fogs, the number and description of lights to be exhibited at night, and other particulars.—*McCulloch*.

The possibilities under which a collision may occur and the rules acted upon by

the Court of Admiralty were very happily set forth by Lord Stowell in the case of *The Woodrop Sims* (1815). In the first place, it may happen without blame being imputed to either party: as where a loss is occasioned by a storm, or any other *vis major*. In that case the misfortune must be borne by the party on whom it happens to light, the other not being responsible to him in any degree. *Secondly*, a misfortune of this kind may arise where both parties are to blame—where there has been a want of due diligence or of skill on both sides. In such a case the rule of law is that the loss must be apportioned between them, as having been occasioned by the fault of both of them. *Thirdly*, it may happen by the conduct of the suffering party only, and then the rule is that the sufferer must bear his own burthen. *Lastly*, it may have been the fault of the ship which ran the other down; and in that case the injured party would be entitled to an entire compensation from the other.

In the U.K. while the liability of shipowners had long been limited by statute as regarded their capacity of *carriers by sea*, they remained liable for the whole amount of the damage faultily occasioned to others in collision, as stated by Lord Stowell, down to 1813, when there was passed the 53 Geo. III. c. 159, section 1 of which exempts the liability of the owners from:

Any loss or damage arising by reason of any act, neglect, matter, or thing done, omitted, or occasioned, without their fault or privity, happening to any goods, wares, or merchandize, or other things laden on board, *or which might happen to any other ship, or to any goods, etc., on board any other ship*, further than the value of the ship, and of the freight due, or growing due for the voyage in prosecution, or contracted for at the time of the loss.

This limitation of liability of the owner to the value of the ship and freight is in accordance with the practice of most foreign nations, as provided by their ins. ordin. or otherwise—with this important exception: that whereas in most other countries the value of the ship and freight is to be estimated as it was *immediately before the collision*, in Great Britain it is held that the value must be taken directly *after* the collision.

In 1840 the Trinity House promulgated a series of rules for the guidance of vessels under circumstances of threatened collision, or with a view to their avoidance; and while they had not the force of law, yet masters not complying with these regulations were held to be guilty of unseamanlike conduct, and the owners were made responsible for the consequences. The later Merchant Shipping Acts have embodied similar regulations, and therefore we now have actual legislation upon the subject.

By the Merchant Shipping Act, 1854—17 & 18 Vict. c. 104—the liability of the shipowner, in cases of damage to ship or goods, was made to depend upon the actual value of the offending ship, and the freight due or to grow due in respect of such ship during the voyage in prosecution, or contracted for—the value of such ship and freight to be taken as not less than £15 p. ton, when the damage arose in respect of loss of life or personal injury. By the 504th sec. this limitation, however, *only applied to cases where the loss or damage happened without the actual fault or privity of the owner*. (See 1862.)

At the Social Science Congress held at Bradford, Yorkshire, in 1859, Mr. J. T. Danson, Barrister-at-Law, and Vice President of the Liverpool Chamber of Commerce, read a paper: *On the Law of Collisions at Sea, where Foreign Vessels are concerned*. The paper is a very able one, and has often been quoted by ourselves and other writers. The author says:

The risk of collision with other vessels is now one of the most serious to which vessels at sea are liable; and the increasing number of powerful steamers running direct courses, and not always slackening speed at night, or in foggy weather, is annually increasing its importance. Where no blame can be imputed to either of the parties concerned, this risk has hitherto been regarded as one of the ordinary dangers of the seas; and as such it may be fully ins. against. *But where either vessel is in fault, the risk assumes a new aspect*; and it is to this class of cases alone that the present paper has reference.

The point of his paper is this—that the measure of damages against the ship in fault should be made the same whether the ship be foreign or Brit.

By the Merchant Shipping Amendment Act, 1862—25 & 26 Vict. c. 63—it is provided that the owners of any ship, whether Brit. or foreign, shall not, in cases where any damage is by reason of the improper navigation of such ship caused, without their actual fault or privity, to any other ship or boat, or to any goods, merchandize, or other things whatsoever on board any other ship or boat, be answerable in damages in respect of damages to ships, goods, or merchandize, or other things, to an aggregate amount exceeding £8 for each ton of the ship's tonnage. The statute provides further, that where there is a claim in respect of loss of life or personal injury, the owners may be liable to the extent of £15 for each ton of the ship's tonnage; but where there are claims for loss of life, and also claims for damage to ships, goods, or merchandize, the owners shall not be answerable in respect of all the claims to a greater aggregate amount than £15 for each ton. Sec. 33 of this Act, regarding the duty of the commander of the ship in case of collision, has a painful interest at the present moment, in relation to the unfortunate *Northfleet*; it is as follows:

In every case of collision between two ships it shall be the duty of the person in charge of each ship, if and so far as he can do so without danger to his own ship and crew, to render to the other ship, her master, crew, and passengers (if any), such assistance as may be practicable, and as may be necessary

in order to save them from any danger caused by the collision. In case he fails to do so, and no reasonable excuse for such failure is shown, the collision shall, in the absence of proof to the contrary, be deemed to have been caused by his wrongful act, neglect, or default, and such failure shall also, if proved upon any investigation held under the third or the eighth part of the principal Act, be deemed to be an act of misconduct or a default for which his certificate (if any) may be cancelled or suspended.

The holding of the omission of any ship, after collision, to render all practicable assistance as presumptive evidence that she is in fault is a provision, we believe, at present, peculiar to the laws of Gt. Brit.

The late Dr. Lushington, in the case of *The Mellona* (1848), said:—"In cases of collision it has been the practice in this country, and, so far as I know, of the European states, and of the U.S. of America, to allow a party alleging grievance by a collision, to proceed *in rem* against the ship wherever found."

In 1863, by an Order in Council made 9th Jan., rules for preventing collisions at sea, framed under the authority of the last-named Act, were promulgated; and they bore evidence of compliance with the suggestions embodied in Mr. Danson's paper.

In 1867 Mr. Richard Lowndes pub. *The Admiralty Law of Collisions at Sea*.

At the Social Science Congress held at Newcastle-upon-Tyne in 1870, the Rev. Dr. Hooppell read a paper, *On a Fruitful Cause of Collisions at Sea, with Suggestions for its Removal*. The writer remarked that the rule of the road on land was not to be compared for a moment in intricacy or difficulty with the rule of the road at sea. The rules at sea were numerous and complex. On land a single rule sufficed for foot passengers—a single rule for vehicles. At sea no fewer than *ten* were in practice. In some of them different individuals might, without prejudice to their judgment, come to precisely opposite conclusions. The present code of regulations was the result of many successive improvements. It prob. was not susceptible of any great emendation, except in the particular of which he was about to speak. There were two most important rules of constant application, in which words were introduced which rendered them the reverse of what they should be in those respects—words which made them intricate, doubtful, and variable. The rules were those applying to ships meeting each other on opposite courses; and the words were only four in number, namely, "or nearly end on." The author showed the mischievous effects of these few short words, by pointing out some of the common positions in which ships find themselves. The mischief caused by these words "or nearly end on" was that they confounded all these cases together. If vessels were not actually end on, they must be actually crossing or passing. In either case the rule for meeting vessels was not the rule to be followed. The gravest consequences followed from the words being indefinite. No two men agreed as to what constitutes "nearly." Many most calamitous collisions had occurred through the different interpretations placed upon the phrase by the commanders of approaching vessels. Commanders of approaching vessels could not communicate with one another as to the rule that was applicable to their case. They had to decide immediately, often under trying circumstances. The writer finally recommended that the ambiguous words should be altogether omitted.

The remedy in case of collision is either by action at law or a suit in the Court of Admiralty.

In the Courts of Common Law the rules stated by Lord Stowell to prevail in the Admiralty Courts also prevail in the 1st, 3rd, and 4th cases set forth by him; but in the 2nd, where both parties are to blame, the rule is that if the negligence of both substantially contributed to the accident, neither can maintain an action against the other. But if one of them, by the exercise of ordinary care, might have avoided the consequences of the other's negligence, the former is liable for any injury the latter may have sustained. This has been finally decided by the House of Lords. In apportioning the damage in cases where both parties have been in fault, the question has often occurred whether the damage done to the cargo shall be taken into account, or left out, in the apportionment on which the estimate is to be made. This point has been differently decided in different countries.

It is not indispensable that vessels should be in actual contact to give one of them a ground of action for damages against the other. For instance, one ship may run aground in endeavouring to avoid a collision with another. This was so determined in the case of the "*Industrie*," before the Admiralty Court in Jan., 1871.

It will be seen from the foregoing that criminal liability, as arising out of collisions at sea, does not appear hitherto to have been contemplated by our maritime laws—the omission to stand by and help is only taken as an evidence of negligence, and is therefore only an element to be regarded in proceeding by civil action. It is not improbable that some alteration in this respect may arise in the new Merchant Shipping Act at present before Parliament.

We understand [1873] that Capt. Bedford Pim, R.N., Barrister-at-Law, is engaged upon a work on the *Law of Collisions at Sea*; and we have no doubt that it will be characterized by that thoroughness which is a distinctive feature of the works of that writer.

COLLISIONS [OF SHIPS], INSURANCE AGAINST LOSS OF LIFE BY.—In the year 1846, by the passing of Lord Campbell's Act [9 & 10 Vict. c. 93], owners of ships became more

directly responsible for damages in the event of passengers being killed on board their vessels by collision or otherwise. This risk was regarded as a serious one, not so much from the frequency of collisions, as from the liability that might ensue from a number of persons being killed by the same casualty.

In Liverpool, from which port large numbers of passenger steamers run to various parts of the U.K. and elsewhere, the subject was regarded as of considerable moment; but a solution was propounded, viz. *that the risk might be covered by means of ins.* Accordingly the *Liverpool and London Ins. Co.* was applied to, and agreed to undertake the risk. A very simple and effective form of policy was devised, as follows:

Whereas—of —, in the county of —, is desirous of effecting with the — Ins. Co. an assu. in the sum of —, against the risk of liability for the death of any person or persons caused within one year from the date hereof by collision between the — ship or vessel called the —, whereof the said — is owner, and any other ship or vessel in port or at sea, if a claim for compensation for such death shall be made, and paid under and by virtue of the Act of Parl. made and passed in the 9th and 10th years of Queen Victoria, entitled, “An Act for compensating the families of persons killed by accidents.” And whereas the assured has paid to the said Co. the sum of —, as the prem. for such assu., the receipt whereof is hereby acknowledged. Now this policy witnesseth, that in consideration of the premises, it is hereby declared and agreed that in case of the death of any person or persons caused by a collision between the said ship or vessel and any other ship or vessel, which shall take place in port or at sea within twelve calendar months from the date hereof, and compensation shall be claimed and paid under the said Act of Parl., then the said Co. shall pay to the assured three-fourths of any sum or sums of money which he may pay in satisfaction of such claims, not exceeding in the aggregate the sum of £— hereby assured. Provided always, that no such claim shall be allowed or settled by the assured without the consent of the said Co. being first obtained. Provided also, that the proportion of claim on any one life which the said Co. shall be liable to pay shall in no case and under no circumstances exceed the sum of £3000. In witness, etc.

We have not been able to ascertain the rate of prem. proposed to be charged. It does not appear that the advantages offered were ever made much use of practically.

COLLISIONS OF SHIPS, STATISTICS OF.—In 1850 Mr. Rucker, Underwriter to the *Lond. Assu. Corp.*, contributed to the *Assu. Mag.* [vol. i. p. 60] a paper: *Maritime Risks—Statement of Collisions, extracted from Lloyd's List for the Years 1845 to 1849 inclusive.* We propose to defer the treatment of the statistics of Collisions until our chap. on MARITIME CASUALTIES, under which head interesting details will be furnished. We will only add here, that from carefully prepared statistics, compiled in the U.S., for the 13 years ending 1872, and embracing collisions in all parts of the world, the number was found to be about 13,000, or 1000 p.a.

COLON (properly *Kolon*, from the Greek, signifying *quasi-hollow*).—The first of the large intestines, commencing at the cæcum, and terminating at the rectum.

COLONIAL ASSURANCE CORPORATION LIM., founded in 1867, with an authorized cap. of £100,000, in 50,000 shares of £2, for the purpose of introducing into Gt. Brit., and ultimately into the Brit. Colonies, the principle of life and accident ins. combined. A very small extra prem. secures the benefit of the combined pol. Hence, a person ins. for £500 in the event of death leaves to his representatives that amount, as in any other life office; but in the event of a non-fatal injury from accident, he will receive, either a specific cash payment, according to the nature of the injury, or £5 p. week during the period of his disability within the conditions of the pol. This provision may enable a pol. to be kept up, which, under other circumstances, from loss of income on the part of the insured, might lapse. The introduction of a system of ins. so obvious in its advantages has taken alike time and money to accomplish; but it has at length taken firm root. In other respects the Corp. has had to share the fate of all young life offices, and its progress has consequently been slow. But it is now firmly established.

The prospectus says:

Sagacious men of business have discovered in L. assu. a means of accumulating wealth with greater ease and certainty than by any other known process. Hence nearly all the bankers, merchants, and brokers of Lond. and other important cities have their lives heavily assured.

If a man desires to leave to his family or connexions £10,000, or £5000, or £1000, or even a less sum, he may, *if he lives*, do so by means of ann. or more frequent investment of his savings, at int., although he may have some difficulty in finding a safe and productive medium for continuous small sums.

L. assu. affords the means of securing to family or friends all that is desired to be left. Death does not interfere with the result; *it only facilitates its fulfilment.* Thus, if £5000 were desired to be left, and only one prem. had been paid, the £5000 would be forthcoming. The failure of investments does not apply. Respectable L. offices always fulfil their engagements. A combination of two principles enables these things to be done—the doctrine of Average and the Accumulation of Int.

The doctrine of average renders it immaterial to the assu. office *which* individual of a number dies. In the aggregate they will live long enough to make the transaction pay the office.

The accumulation of int. few, except keen business men, understand. £8 paid down and invested at five p.c. compound int. will, in *one hundred years*, produce £1000; and of course corresponding results for shorter periods.

The general conditions of the office are liberal; and there are some “special features.” Thus:

1. That at the end of every third year there is invested in Gov. securities the office surrender value of all the pols. entitled to participate in profits which have been in force for three years or upwards.
2. Certificates are issued to every parti. pol.-holder at such triennial periods, informing him of the par value of the stock to which he is entitled at that date on the surrender of his pol.
3. On the back of each parti. pol. is indorsed a form of receipt, which, being properly filled up and signed by the pol.-holder, will, on presentation to the office, secure to him a transfer of the proper amount of stock to

which he may be entitled in consequence of the surrender of his pol. to the office. 4. Where pol.-holders are resident abroad, the office will sell for him the stock to which he may be entitled, and remit to him the proceeds, less the necessary expenses, if he so desire it.

The annexed T. gives examples of the ann. prems. for non-par. life and accident pol. combined:

The parti. scale is something higher.

The Co. was founded by the present writer. Its Gen. Manager is Mr. Philip Sayle; its Actuary Mr. E. Justican.

Age next Birthday.	Pol. £100.	Pol. £250.	Pol. £500.	Pol. £1000.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
18	2 2 11	5 2 4	9 16 7	19 9 2
20	2 4 7	5 6 6	10 4 11	20 5 10
25	2 8 10	5 17 1	11 6 2	22 8 4
30	2 14 2	6 10 5	12 12 10	25 1 8
35	3 0 11	7 7 4	14 6 7	28 9 2
40	3 9 7	8 9 0	16 9 11	32 15 10
45	4 0 10	9 17 1	19 6 2	38 8 4
50	4 15 8	11 14 2	23 0 4	45 16 8
55	5 18 2	14 9 1	28 7 11	56 10 9

COLONIAL FIRE INSURANCES.—In 1810, by 50 Geo. III. c. 35, permission was given to any person resident in Gt. Britain to insure houses and property in any of the Islands, Settlements, and Territories of His Majesty, including the West Indies and elsewhere beyond the seas, against *loss by fire*, without any license. But the stamp and per-centage duties payable were to be the same as in England. Ins. of *foreign* property, as distinguished from colonial, was exempt from per-centage duty, but liable to stamp duty on pol. This is the first mention made in our statutes of Ins. in the Colonies; although we presume such ins. had long been effected.

In 1815, by 55 Geo. III. c. 184, the stamp on colonial policies was increased to 2s. 6d.; and the per-centage duty to 5s. per £100 ins. This per-centage duty was just twice the amount then payable on home ins. Whatever the intention of the measure may have been, its effect was to encourage the founding of F. ins. offices in the colonies. [FIRE INS., DUTY ON.]

COLONIAL, FOREIGN, AND GENERAL ASSU. CO. FOR FIRE, LIFE, AND MARINE.—A Co. under this title was projected in 1845 by Mr. Peter Lund Simmonds, who was to be its Man. Director. The proposed cap. was £1,000,000, in 40,000 shares of £25. The preliminary prospectus said:

Our vast and widely-extended colonial possessions, daily becoming more and more densely populated by emigrants, are for the most part shut out from the benefit of assu., where such a provision is essentially requisite for the safety of the stock, and the protection of families, frequently left unprovided for, in a strange land, by the death of friends or relatives.

The Colonies have from time to time enjoyed the benefit of banks, railroad cos., etc., etc., but as yet have possessed only in a very limited and imperfect degree any provident inst. adapted to ins. for F. and L. . . . Some few of our older-settled colonies have their local assu. offices, conducted for the most part on the mut. principle; but from their being estab. on a very limited basis, with circumscribed cap. and small experience, any great calamity, such as an extensive fire or a sickly season, usually entails ruin on the office.

One or two Lond. offices, with small cap., . . . have recently estab. a few agencies in Canada, India, and Australia; but they have founded their rates of prem. upon the returns of mort. among the Brit. and Indian troops on foreign service—a very unsatisfactory source of computation as regards civilians and colonists generally, whose habits and occupations are essentially different. These offices resorted doubtless to such imperfect and defective sources of calculation, because no others were within their reach; but from a careful investigation at the Colonial Office of voluminous returns of the progress of pop., and others, procured with great labour from local agents, of the deaths in each colony for a series of years, as furnished by the parish regis., by consulting the best authorities as to climate, and making due allowance for the progressive improvement effected by drainage, extended cultivation, etc., tables of mort. have been framed for each of our four distant dependencies, and the decrement of human life so precisely ascertained, that much lower rates can be taken with safety than have heretofore been charged.

The dwellings, warehouses, and buildings in the Colonies are for the most part constructed of less substantial materials than those in the older countries; and the stores are generally stocked with valuable goods: yet no means of indemnification are at present afforded to owners of property of this kind against the ravage of fire. The present difficulty and expense of effecting ins. undoubtedly deter many from availing themselves of the means of protection, who would otherwise gladly do so.

In 1846 the Co. was founded under the title of the *Colonial and General*. Mr. Simmonds became its Man.; Mr. Colin T. Campbell was the Sec. In 1847 the bus. and connexions of the Co. were transferred to the *Standard*.

COLONIAL LIFE ASSU. CO., founded in Edinburgh in 1846, with a cap. of £500,000, in 10,000 shares of £50 [afterwards increased to £1,000,000, in shares of same denomination]. The estab. of this Co. forms an epoch in the hist. of Life Ins. On this point we shall speak more particularly under FOREIGN RESIDENCE. The founder of the Co. was Mr. W. T. Thomson, whose name is known wherever the blessings of L. ins. have become understood; and he has placed on record some account of the circumstances which led to its estab.

In 1845, during the progress of an investigation of the affairs of the *Standard L.*, it appeared clear to its Act. [Mr. Thomson], “that the extra rates demanded by offices in general for foreign residence were very much beyond what was requisite to protect them from the extra risk incurred; and that the terms and conditions of assu. were not suited to such transactions—keeping in view more particularly the increased facilities afforded

for travelling abroad, and the constant inducements to foreign residence, arising from the pursuit of bus. or pleasure." This conviction became more settled the further the subject was pursued ; and it was resolved to institute an inquiry as to the possibility of procuring sound data on which to found more correct rates for foreign residence.

This inquiry was entered upon by Mr. Thomson. He brought together all accessible information as to the value of life in Brit. N. America, the West Indies, East Indies, Cape of Good Hope, Australia, and other places abroad. His report embraced not merely statistical facts and figures, but the opinion of the most eminent medical men in those countries was sought and obtained. Many of these gentlemen had spent the greater part of their lives in the particular climates under consideration. The result of a consideration of the able report of Mr. Thomson was a resolution to found the *Colonial* ; and steps were taken to that end early in the following year. [The name orig. proposed for the Co. was the *Colonial Standard* ; and every shareholder in the *Standard* was allowed to subs. for one share in the new Co. in respect of each five held in the *Standard*.]

The "Contract of Copartnery" was dated 14th Oct., 1846, and set forth that the Co. was estab. for the purposes following, or any of them :—To make or effect assu. on the lives of parties proceeding or having the intention of proceeding to or remaining in *India*, or the Colonies, or to other places beyond Gt. Brit. and Ireland, and on the lives of military or naval officers or seafaring persons, or on the lives of persons residing in Gt. Brit., *but in connexion with whose lives any special contract should be entered into with reference to residence abroad* ; and to grant and sell annu., either for lives or otherwise, and on survivorship ; and to purchase annu. ; to grant endow. for children and other persons ; and to receive investments of money for accumulation ; to purchase contingent rights, whether of rev. remainder, annu., life pol., or otherwise ; and generally to enter into any transaction depending upon the contingency of life, and all other transactions in use to be entered into by L. assu. cos., including re-insurance. The orig. prosp. said :

The practice of L. ins. in any country indicates a state of society where high moral feeling and commercial confidence exist ; and its progress in Gt. Brit. is a marked feature in the national character. . . . In England, . . . L. assu. has become a general practice, an understood duty, and an essential portion of every monetary contract. . . . Want of statistical information as to the value of human life has no doubt retarded the adoption of the system in many countries where its aid or protection would be eagerly sought, if well-founded inst. were provided for its practice : but the time has now arrived when increased knowledge enables its benefits to be extended with safety to many other parts of the world, where hitherto it has been unknown, or at least unpractised, except under great disadvantages, by a distant and tardy correspondence and at great expenso. In France, Germany, and other European countries, L. assu. has made some progress ; but beyond the limits of Europe the practice is very limited.

In the *Brit. Colonies* there is a general anxiety for the introduction of such institutions, of which at present they are almost entirely destitute. In one or two instances small schemes have been commenced for the purpose of L. assu. These, however, are local, and consequently limited in their operations ; not obtaining sufficient numbers to give a proper average of life, and being conducted with comparatively great expense.

In *India* L. assu. offices exist, but there is still a wide field open to an inst. founded on the most recent experience, conducted with liberality, and affording those facilities which well-constituted L. assu. inst. in Gt. Brit. now adopt.

The Colonial L. Assu. Co. has been estab. for the purpose of extending to the Colonies of Gt. Brit. and to India, the full benefit of L. assu. ; and for the purpose of giving increased facilities to persons visiting or residing in foreign countries.

With a view to facilitate the operations of the Co., branches or agencies were estab. in the East Indies and Ceylon ; in Canada, New Brunswick, Nova Scotia ; in the West Indies, Cape Colony, and Australia.

Regarding the prems. to be charged we are told :

The rates which the Co. have adopted have been formed on the most correct obs. which exist as to the value of life ; and the directors have to acknowledge, among other sources, the valuable aid which they have received from the Parl. Reports prepared by Col. Tulloch, in regard to the mort. among Brit. troops in the Colonies of Gt. Brit. ; and the important assistance in their proceedings afforded by Henry Marshall, Esq., Deputy Inspector-Gen. of Army Hospitals, and medical adviser of the Co.

The arrangement of the countries in which the Co. undertook the risk of residence into classes, with corresponding rates of prem. and conditions for each class, was exceedingly clear and comprehensive. This part of the prosp. will be dealt with under head of FOREIGN RESIDENCE.

The conditions regarding officers of the army and navy were very liberal. These will be spoken of under MILITARY SERVICE and NAVAL SERVICE respectively. Then under title of "Protective Insurances" *whole-world* licenses were issued. [WHOLE WORLD INS.]

Among the orig. shareholders of the Co. were some of the nobility, gentry, and leading merchants of Scotland. The Co. also had the support of several of the Scotch L. offices not undertaking direct foreign bus. ; but its chief strength lay undoubtedly in its intimate relations with the *Standard* L.

The report presented at the fifth ann. gen. meeting, held in 1851, said :—"The rate of mort., making all allowances, has thus been considerably under 1 p.c.—a result which, in the most favourable circumstances, could scarcely have been looked for in a class embracing Brit. lives only."

In 1852 the Co. absorbed the bus. of the *East of Scotland*, founded 1845.

In 1854, or earlier, it commenced bus. in the U.S., and continued the same down to 1861, when the affairs of the agency were closed.

In 1854 the period arrived for making the first investigation in the affairs of the Co., with a view to the ascertainment and division of surplus. The report of the Act., Mr. Thomson, on that occasion, is full of interest. The Co., we are told, was received from the first in every colony with the promise of bus., and the "support of the highest authorities was accorded to it." The following T. shows the progress of the bus. :

Years.	Pol. issued.	Insuring.	Pol. in Force.	Deaths.	Claims in each year.
1847	112	£102,274	112	0	£ 0
1848	215	160,502	307	2	870
1849	205	129,938	473	6	3449
1850	241	162,492	635	3	2699
1851	274	184,408	837	7	4699
1852	319	205,111	1089	7	3245
1853	478	256,311	1474	12	6649
1854	523	308,368	1854	21	11299

The ins. in force on 25th May, 1854, amounted to £1,261,517.

The next T. shows us the places or parts of the world in which the ins. had been effected :

	Sums Ins.	Ann. Prems.
Gt. Brit. (chiefly on lives of persons going abroad)	£495,280	... £18,031
North America.....	351,404	... 10,652
West Indies	263,851	... 15,616
East Indies, including Ceylon, China, Penang, and Manilla	131,579	... 6251
Cape of Good Hope and Mauritius [agencies more recently established]	19,399	... 712

The report contained some other interesting and instructive details. Then we are told :

After the Co. was estab., various local offices arose in the Colonies from time to time, brought into existence chiefly by the example of the *Colonial*; and the directors were well pleased to find that the provident spirit they had endeavoured to create had been fully aroused, and showed every prospect of being widely responded to. They did not dread the opposition of these cos., however, satisfied that a wholesome rivalry was beneficial; and so it has proved—for this Co. has been most completely successful in those places where the opposition arose. In some instances, native institutions were found to exist when the Co. extended their bus. to particular localities; one of these in the W. Indies handed over its affairs to the *Colonial*; others still exist, and one of them, the *Jamaica Mutual*, although on a comparatively small scale, has given very satisfactory results, and promises, with continued prudence, to do well. But the *Colonial* did not and does not find that these local cos. in any degree retard its progress—on the contrary, as said before, they tend to keep alive prudent and provident thoughts in men's minds; while, even as rivals, their respective interests do not clash to any extent. The local offices suit those who have no prospect of leaving the locality in which the co. is estab.,—persons who can watch the management of the inst., and probably take part in it; but the *Colonial* is on a wider basis: it is managed by persons who have been for years in the daily practice of transacting L. assu. bus. on a large scale; its investments are not confined to the locality, island, or colony in which the Co. subsists, but are made partly in the Colonies, and partly in Gt. Brit.

The valuation of the risks of the Co. was based upon (1) the *English Mort. T.*; (2) the data of Messrs. Dodwell and Miles in regard to the army in India; and (3) on the T. adjusted with reference to the particular risks as derived from the information in the hands of the Co. The rate of int. assumed was 3 p.c., except in some exceptional cases. A divisible surplus of £51,000 appeared, of which about one-half was distributed to the pol.-holders, yielding a rev. bonus of 2 p.c. p.a. A new issue of £500,000 cap. took place after this investigation, at a prem. of 30s. p. share. The prem. income of the Co. was at this date £51,263. Its invested funds reached £172,539.

A reduction in the rates of prem. for certain classes of the Co.'s bus. was made soon after this investigation, some of the results of which will be spoken of under date 1859.

In 1855 the Co. obtained a special Act—18 & 19 Vict. cap. cxxv.—*An Act for Incorp. the "Colonial L. Assu. Co."*; for enabling the said Co. to sue and be sued, to take and hold property; and for other purposes relating to the said Co. The Co. was incorp. "with perpetual succession and a common seal"; but the liability of the Co. and shareholders to continue. The pol. already issued to remain effectual. The head office of the Co. to be in the City of Edinburgh. The Co. having now ceased to carry on bus. as a distinct corp., it is not necessary to follow the provisions of the Act in further detail; but there was contained a clause regarding amalgamation sufficiently important to be perpetuated :

XXV. It shall be lawful for the directors (three-fourths of their number agreeing and concurring) at any time to undertake, on behalf of the Co., the payment of the sums and annu. respectively assured and granted by any assu. co. or so. desirous of being dissolved or of relinquishing the whole or any part of their bus.; and to purchase the bus. of any such co. or so., and to make such contracts and arrangements with any such co. or so. for enabling the directors to complete such undertaking, and to exonerate the co. or so. so dissolved or relinquishing bus. from all further liability in respect of the sums and annu. which the directors, on behalf of the Co., may have undertaken to pay; and to obtain from any such co. or so. a transfer to the Co. of so much of the funds or property and bus. of such co. or so. as the directors shall think fit.

The provisions of the Cos. Clauses Consolidation (Scotland) Act, 1845, were incorp. into this Act.

In 1859 a second investigation for surplus took place. The progress of the bus. and resources of the Co. during this quinquennium were as follow :

Years ending May 25,	Amounts proposed for Assu.	Policies issued.	Amount of New Assu.	Ann. Revenue.	Accumulated Fund.	Claims by Death.
1855	£372,665	524	£319,371	£67,451	£192,323	£18,384
1856	413,572	503	339,623	76,686	223,790	18,279
1857	357,590	465	304,190	84,801	258,453	17,892
1858	367,489	470	316,809	92,519	298,332	30,923
1859	438,900	557	347,006	100,904	342,354	26,184

The claims of 1858 included £7300 in consequence of the *Indian Mutinies*. The report of the Act. says :

In these five years the stability of the Co. has been tried by a combination of events well calculated to test its principles. We had the Crimean war in 1854 and 1855, which exposed many connected with the Co. to increased risk ; the Indian mutinies in 1857-8. Cholera and yellow fever visited various places where the Co. had extended their bus. ; while the commercial difficulties of 1857 militated against the extension of bus. But through all these the Co. has passed unharmed, with a reputation increased both at home and abroad.

The T. employed in the valuation were the same, “with trifling exceptions, founded on add. experience,” as in 1854. The divisible surplus amounted to £66,017.

The sum of £34,518 was applied to a rev. bonus at the rate of 1½ p.c. p.a. on the sums ins. The report said hereon :

When it is borne in mind that the Co. have since 1854 reduced their rates of prem. for various classes of assu., the difference is easily explained ; and the Act. has proved to the Directors, by a careful investigation, that these deductions amount to no less a sum than £10,000—an amount which, had it been received, would have authorized the declaration of the bonus at the higher rate.

It was stated that an investigation was in progress regarding the results of each class of risks undertaken by the Co. The ann. income of the Co. was reported to be £100,904 ; the accumulated fund £342,354.

In 1860 the Co. introduced the system of “unconditional assurance,” of which we shall speak under LIFE INS., IMPROVEMENTS IN.

In 1864 the third investigation for surplus took place. The progress of the bus. and resources of the Co. during that quinquennium were shown to be as follows :

Years ending May 25,	Amounts proposed for Assu.	Policies issued.	Amount of New Assu.	Ann. Revenue.	Accumulated Fund.	Claims by Death.
1860	£ 466,705	587	£ 357,746	£ 108,938	£ 378,057	£ 35,715
1861	559,165	713	429,175	119,353	412,016	35,689
1862	568,430	691	439,565	126,719	449,767	51,441
1863	531,267	825	428,742	133,775	481,690	58,925
1864	606,744	880	501,261	144,824	555,753	63,311

The surplus shown amounted to £73,147 ; of which it was resolved to distribute £63,147—viz. £53,022 to pol.-holders, yielding a bonus of £1 10s. p.c. p.a. on the sums insured ; and £10,125 to the shareholders. The remaining £10,000 was carried to a guarantee fund.

The localities from which the bus. of the Co. had been obtained from the commencement were given, as follows :

Gt. Brit., including persons going abroad or having the prospect of foreign residence.	...	...	...	...	...	£1,983,040
British North America	...	...	...	...	...	1,256,241
West Indies	...	...	...	...	...	794,189
East Indies	...	...	...	...	...	499,546
Ceylon	...	...	...	...	...	279,108
Cape of Good Hope and Mauritius	...	...	...	...	...	313,100
Australia and New Zealand (branches newly opened)	...	...	...	...	...	84,099
Other places	...	...	...	...	...	8,800
Business of an office transferred to <i>Colonial</i>	...	...	...	...	...	117,748

Total bus. transacted, but a good deal of which had run off ... £ 5,335,875 .

The Report said the directors had frequently been urged to reduce their rates for various climates, and they had given these appeals their most serious consideration ; “but after weighing well the arguments brought forward, and studying with much care the results of their own mort., they have come to the conclusion that they have not suf-

ficient data to authorize their making the proposed reduction." The directors add, with characteristic frankness :

There is no doubt that other offices are transacting bus. at lower premis. in many places, and prove formidable rivals to the Co.; but that is not an argument, taken by itself, which has any influence with your directors, as they are satisfied that the *Colonial* rates, as far as present reliable knowledge extends, are fair and equitable. But as soon as they are satisfied, by the result of sound obs., that these rates are unduly in excess, they will promptly give the assured the benefit. Small inst. making large rates of int. on comparatively small sums, locally invested, and restricting their operations to a narrow circle, may transact bus. on lower rates, trusting to the fortunate continuance of such results during the lives of the assured; but with these inst. the directors do not place themselves in competition. They have their local advantages, and may be preferred by those more especially who can take part in their management and watch over their local proceedings. But in the case of one who looks forward with prudent anxiety to the future, long deferred as the lifetime of an individual may be, the *Colonial* seeks a preference, as standing on a wide basis: their character and position being as well known and recognized in every Brit. Colony as in Edin., Lond., or Dublin.

On the founding of the *Home and Colonial Ins. Co.* in 1864, this Co. took steps to restrain that Co. from using the second portion of its name, but without success.

As a proof of the careful attention bestowed upon the orig. scheme of the Co., it may be stated that no material change was found to be necessary during a period of nearly 20 years of practical working. The rates in certain classes, as already stated, were modified; but in other respects the project was well matured from the beginning.

In 1865 the peculiar relations in which this Co. stood in regard to the *Standard Co.* became the subject of consideration. The *Colonial*, as we have seen, owed its existence to the *Standard*. The directors were in part the same; the Man. and Act. was the same. The *Standard* had aided the younger Co. in forming its colonial connexions; but, as a penalty, had been shut out from colonial bus. itself. The *Colonial*, on the other hand, had cultivated some home bus.; and in that sense had become a competitor of the *Standard*. Elements of antagonism had thus, as a necessity of the situation, become invoked. They might grow wider; there was a prospect that they would. The management surveyed the position of matters fully and fairly, and a conclusion was formed that a fusion of interests was the most practical solution of the entire questions involved. The shareholders of the respective cos. had a comprehensive "memorandum" addressed to them. That addressed to the proprietors of this Co. bears date April, 1865. It would appear that the proprietors concurred in the views set forth by the Man.; and accordingly an amalg. of the two Cos. was arranged, upon the basis of one share in the *Standard* being exchanged for each four in the *Colonial*; and so these two flourishing institutions became one—to the advantage, as it appears, of all concerned. The arrangements were not finally completed until 1866.

We may add that the bus. of the Co. is carried on as a separate branch of the *Standard* bus., and upon the original basis of 1846. [STANDARD LIFE.]

COLONIAL LIFE ASSU. CO., MORTALITY EXPERIENCE OF.—Interesting T. of the Mort. Experience of the *Colonial* were some years since prepared for the purpose of the internal working of the office. These have never been pub., but we believe their results have been open to all other offices which cared to profit by them. Some few interesting facts regarding the early mort. experience of the Co. are contained in the preceding art.

At the bonus meeting, 1864, among the statements submitted by the Act. were—
1. The mort. of the Co. during the 5 years from 25th May, 1859, to same date, 1864.
2. The mort. of the Co. during the previous 5 years 1854–9. 3. The mort. of the Co. during the whole period of the Co.'s existence—from Aug. 1846, to 25th May, 1864.

Again, each of these was submitted in a tabular form, and showed the actual results as compared with the original calculations: while other tables of mort. were appended to illustrate still further the results of the Co.'s operations.

The report of the directors contained this important passage:

It would be premature to pub. these curious and instructive results, as the directors are anxious to add to their experience before giving them to the world; but it may be stated that the proportion which the actual number of deaths bore to the expected number had increased very considerably during the period of five years from 1859 to 1864, beyond that exhibited during the period of 13 years from 1846 to 1859, in Gt. Brit., in America, in the East Indies (civil life), in Ceylon, and in the W. Indies—showing that the mort. increases relatively in a greater degree as the Co. advances in age—that is to say, the mort. among lives which have been connected with the Co. for 10, 15, or 20 years, will be increasingly greater than among lives of the same age in the first five years of their connexion with the Co.; or otherwise that the mort. among a certain number of persons of the same age, in the 2nd, 3rd, or 4th periods of 5 years respectively after joining the inst., will have gradually increased, affording less favourable results as we recede from the period at which the lives were accepted. [SELECTION, MEDICAL.]

But the rep. by Prof. Christison, the med. officer of the Co., presented on the same occasion, contained some more explicit details—indeed, some facts of very considerable interest. He said the Co. had been long enough in existence, and its bus. was sufficiently extensive in various parts of the world, to supply, from an investigation of the deaths, some useful information as to the *causes of death in various climates*, and their bearing on the principles and practice of ins. He then furnished some details, of which the following is an abstract:

The deaths down to the most recent date have been 578. Of these 230 have occurred in temperate countries, and 348 in hot climates. The only colonies belonging to the temperate class in which the deaths have been numerous enough to yield trustworthy results are those of Brit. N. America. The

number is 168. The several causes of death in general bear the same ratio to the general mort. as in home risks, as deduced from the large experience of the *Standard Assu. Co.*, given in their pub. reports. The main differences are, that inflammatory diseases of the lungs and violent deaths are nearly twice as frequently the causes of mort. in the Brit. possessions of N. America as at home; and pulmonary consumption also somewhat more frequent, but dysentery rather less so.

In hot climates at large, those diseases which are usually held to be produced, or at least promoted by climatic exposure—fevers, liver disease, cholera, and dysentery—account for 458 deaths in every 1000 of the total mort.; in temperate climates for only 195, or less than one-half the proportion in hot countries. On the other hand, *inflammatory diseases of the lungs account in hot countries for only a third of the proportion of deaths which they occasion in temperate lands, viz. 31 in 1000 in place of 99; and pulmonary consumption and malignant diseases are similarly circumstanced: the proportions being 99 and 262 in 1000 against hot climates.* It is worthy of remark that head diseases do not appear to be more frequent causes of death in hot climates.

These ratios, however, differ in different hot climates. The most remarkable differences occur in comparing India with the West Indies. In the West I. there have been 108 deaths; in the East I. 97. The relative differences will best appear from the following T.:

		West I.	East I.
In 1000 deaths—	Fevers	250	175
"	Head Diseases	210	103
"	Inflammation of Lungs	53	0
"	Diseases of the Circulation	77	32
"	Diseases of the Liver	107	195
"	Dysentery	54	185
"	Consumption	66	41
"	Violent Deaths	35	160

The learned Prof. proceeds:

The peculiarities among East I. risks are brought out even more strongly when the attention is confined to military life. Diseases of the head are, among Indian officers, only one-half the proportion observed in the West I. Consumption is very rare, there having been only 1 death from this cause among 50 deceased officers. Inflammations of the lungs do not appear at all in their list. But the four great causes of tropical mort.—fever, cholera, dysentery, and liver disease—account for 640 deaths in 1000; and violent death, partly referable to the mutiny, accounts for no less than 195.

These differences may be owing in part to European lives in Europe being select, and partly to climatic causes destroying in early life those who might otherwise have been left to die of pulmonary disease, both acute and chronic. It remains to be seen, from a more minute examination of the data in possession of the Co., what share in the differences indicated may be owing to either of these, or to other causes; and whether there are any points at the period of proposing assu. which may supply a guide to the Co. to the specialities of risk thus indicated.

Since this period more elaborate investigations have been made, and we venture to look forward to the time when the same liberal spirit which has characterized the previous acts of the management will cause the publication of this larger experience of the Co., for the benefit of the entire Ins. profession.

COLONIAL LIGHTHOUSES.—In 1855 was passed the 18 & 19 Vict. c. 91—*An Act to Facilitate the Erection and Maintenance of Colonial Lighthouses, and otherwise to amend the Merchant Shipping Act, 1854.* This Act provides that wherever any lighthouse, buoy, or beacon has been, or may hereafter be, erected on or near the coast of any Brit. possession, by or with the consent of the legislative authority of such possession, Her Majesty may, by Order in Council, fix such dues in respect thereof to be paid by the owner or master of every ship "which passes the same, or derives benefit therefrom," as Her Majesty may deem reasonable; and may vary or repeal the same. [LIGHTHOUSES.]

COLONITIS [*Kolonitis*] *Colitis*.—Inflammation of the colon: a term employed as synonymous with *dysentery*.

COLONIZATION ASSURANCE CORP.—This Co. was projected in 1849, and was founded in Lond. in 1850, for a novel purpose, viz. the carrying on of L. ins. in connexion with colonization. Its authorized cap. was £100,000, in shares of £10. About £28,000 was subs. The orig. prospectus said:

This Co. is formed to estab. a new system of colonization, by which the cap. of the emigrant is preserved entire. This great object is effected by enabling him to pay for his land out of the profits realized from its cultivation.

Under the Co.'s system, the emigrant receives from the Co. land *selected by himself*, under a lease and pol., calculated according to the number of acres and period of time—life, years, or both—*agreed upon*. The lease confers *possession*, and the pol. entitles him to absolute *ownership* at the end of the term, by regular payment of the rent during the interval.

The arrangements made with H.M. Gov. will enable the Co. not only to divide a handsome profit, but to render such assistance to their settlements as to insure prosperity. The nature of the tenure gives an entirely new security to the Co., unattainable by landlords in this country, since the holder has an equally powerful and new motive for improvement and punctuality.

The system, with all its details, has been framed, with the aid of experienced colonists and able actuaries, so as to insure to the Co. the most perfect security, and to the emigrant the soundest information, the fullest *freedom of choice and action*, and, above all, a *constant and abundant supply of labour*.

The Co.'s bill for incorp., having been previously submitted to H.M. Gov., is now before Parl., and restricts the liability of proprietors to the amount of their subs.

The first Deed of Sett. of the Co. bore date 31 Dec., 1849; but this was cancelled, and another D. of Sett. bearing date 22 March, 1850, was substituted in its stead. This deed set forth the bus. or purpose of the Co. to be as follows: To purchase, to exchange, to surrender, and either for cash, or for ann. or other periodical payments, either determinable or not determinable with life, or for other considerations, to sell lands, tenements, and hereditaments, in the colonies and dependencies of the Brit. Empire, or any or either of them, and by lease or license for any such consideration as aforesaid to

confer the right of mining, quarrying, brickmaking, limemaking, building, farming, depasturing, and cutting timber, or any or either of them, or any other right or privilege in or upon any such lands, tenements, and hereditaments, and also to carry forward emigration to the colonies and dependencies aforesaid, or any or either of them, to convey or procure to be conveyed thither emigrants, and to obtain the prems. or bounties, whether in money, land, or land scrip, which shall become due, and such other profit or remuneration, if any, from any source whatsoever as can be obtained for or by reason or means of the introduction or conveyance of such emigrants as aforesaid.

In 1850 the Co. obtained a special Act of Parl., 13 & 14 Vict. c. xxi.—*An Act for Incorp. the Colonization Assu. Co., and conferring certain privileges on the said Co.* This Act received the Royal Assent June 10, 1850. It recites the D. of Sett., and then proceeds :

And whereas the operations of the said Co. are likely to be productive of great benefit to the various colonies and dependencies of the Brit. Empire, and such operations would be greatly facilitated by conferring on the said Co. a more complete incorp., and a more ample right of taking and holding lands in a corp. capacity, than can be respectively obtained under the said Acts [for regis. and incorp. of joint-stock cos.], or either of them, and by removing and modifying in favour of the said Co. certain of the obligations and penalties which are by the said Acts, or one of them, imposed; and it would further facilitate and greatly encourage the operations of the said Co. if certain exceptions in favour of the said Co. bearing some proportion to the progress of such operations were made in the provisions of a certain Act . . . [5 & 6 Vict. c. 36] intituled, *An Act for regulating the sale of waste land belonging to the Crown in the Australian Colonies*; and of a certain Act . . . [9 & 10 Vict. c. 104] intituled, *An Act to amend an Act for regulating the sale of waste land belonging to the Crown in the Australian Colonies, and to make further provisions for the management thereof*; and it is expedient that such facilities and encouragement as aforesaid should be afforded to the said Co.

It is then enacted that the Co. be incorp. with perpetual succession, "and be acknowledged as such in Gt. Brit. and Ireland, and in all the colonies and dependencies of the Brit. Empire," and should have a common seal, and the estates and effects of the said Corp. should be the fund out of which the contracts, engagements, and liabilities of the said Corp. should be provided and satisfied. The Corp. may purchase and hold lands "to any extent" in the colonies and dependencies of the Brit. Empire (sec. 2). The liabilities of the shareholders among themselves not affected by incorp. of Co. (s. 4). The cap. of the Corp. not to be increased beyond £100,000 without consent of Treasury (s. 6). Power to Governor of Western Australia to issue land scrip to the Corp. in respect of emigrants (s. 8). Land scrip may be taken in payment for lands purchased by the Corp. (s. 9). Act not to repeal existing law regarding disposal of public lands in colonies and dependencies (except in Western Australia); and Corp. not to extend its operations to any other colony without permission of the Sec. of State (s. 12). Act to be cited as "The Colonization Assu. Corp. Act, 1850," (s. 14); and to be a public Act (s. 16).

The promoters of the Co. were Mr. Jas. Huggins and Mr. Wm. Wood. Mr. Mark Dyett was the orig. Sec. of the Corp., and he was succeeded by Mr. Charles Stewart Bailey, who, we believe, was succeeded by Mr. Pemberton. In 1850 the Corp. pub. and circulated: *Report of Western Australian Agent.*

The hist. of the Corp. is a remarkable one. It appears that the orig. managers of the enterprise, at a very early stage, invested its funds in the purchase of a considerable estate in the neighbourhood of Freemantle, Western Australia, and this produced a lock-up of its resources. The directors retired in disgust; the shareholders abandoned the project in despair—but the land remained; and about the close of 1869, or after nearly twenty years, began to be of considerable value: hence the dormant Corp. has been restored to animation, and those of its former sponsors who were alive speedily came back to it, and it is again a "going concern."

The following adv. appeared in Jan., 1870, bearing the signature of Ulysses Latreille, "Acting Sec.":

COLONIZATION ASSURANCE CORPORATION.—A.D. 1850.—Notice is hereby given, that the annual general meeting of proprietors in this Corporation will be held at the Company's office, No. 139, Gresham House, Old Broad Street, in the city of London, on the 26th day of Jan. inst., at one o'clock precisely, to receive the accounts and balance-sheets, and reports of the directors and auditors, for the year ending 13th Dec., 1869, to transact the other ordinary business prescribed by the D. of Sett., and to consider the position of the affairs of the Corporation generally.—Dated this 10th day of Jan., 1870.

In April of the same year a general meeting of the proprietors was held for the purpose of making new laws, regulations, and provisions; and for repealing some of the previous ones.

Out of the resuscitation of the Corp. a suit in Chancery has already arisen, *Kimber v. Barber* [decided by the Lord Chancellor on appeal from the Master of the Rolls, Nov. 1872]; but as the transaction only relates to dealing in shares by outside parties, the Corp. is not in any way affected by it.

COLORADO, INS. LAWS OF STATE OF.—No special ins. department appears to exist at present in this State. The revised statutes of the State (1868) contain the following provisions regarding ins. asso.:—1. Agents of foreign ins. cos. to signify acceptance of appointment to the county clerk. 2. Penalty for carrying on bus. without license not to exceed 300 dols., or imprisonment in county jail for term not exceeding six months; or by both fine and imprisonment. 3. Ins. cos. of other States to pay a territorial tax of 1 p.c. on the prems. of the preceding year, and return list of ins. Agent personally liable.

There appears now to be a further tax of about 1 p.c. to the county on all life prems.

COLUMBIA, DISTRICT OF U.S., INS. LAW OF.—The city of Washington, the capital of

the U.S., is by law made into a separate district, which is placed under the control of the Federal Gov. All the separate states and territories are, for internal or domestic purposes, regulated by their own laws. Hence it comes about that the city of Washington, *i.e.* the district of Columbia, has a distinct ins. law. This is found in the Act 2nd March, 1867. Power is given to license, tax, and regulate agencies of all kinds of ins. cos. But it is provided that the tax shall not exceed 1 p.c. on the prems. received. For the license a fee of 10 dols. is charged. There is no ins. department.

COLUMNAR METHOD [COMMUTATION METHOD].—This is a technical designation, applying to the arrangement of preparatory T. for annu. and L. ins. calculations. But for the controversy which has arisen regarding the priority of invention, a few lines would dispose of the subject, as being too technical for popular elucidation.

The construction of the Commutation T. is effected by combining in a peculiar manner the rates of mort. and int. ; and, as in the T. adapted to the old method, any rates that are most approved of, as regards these elements, may be employed. But whatever may be the rates of int. and mort. made use of, the demonstrations and formulæ, being generalized by the employment of symbols, will be equally applicable to all T. of the same form. —Gray, 1842.

In T. arranged on this method there are two sets of columns, designated respectively, from the purposes to which they are applied, "annuity" and "assurance" cols. They are distinguished by letters, arbitrarily chosen, placed on the top ; and there is in each a value corresponding to each year of age. The letters designating the annu. cols. are D, N, S ; and those designating the assu. cols. are now C, M, R. By means of T. so arranged the value of any benefit may be found, whether it be constant, increasing, or decreasing. By actuaries this is frequently designated as the D and N system.

It seems hardly necessary to state that some of the earlier exponents of L. contingencies did not proceed upon this plan ; the inquiry of origin, therefore, assumes the form of chronological investigation.

Taking the range of authors on life contingencies from Halley in 1693, De Moivre in 1725, and later ; Simpson in 1742, Kerseboom (in Holland) in the same year ; De Parcieux (in France) in 1746 ; Hayes in 1746 ; Hodgson in 1747 ; Stonehouse in 1754 ; down to and including Dr. Price in 1771, it has never been claimed that any of these approached the Columnar method in the introduction of the monetary element into life tables.

In 1772 we reach the first writer to whom the advantages of the Columnar method presented themselves. This was Dale, an Englishman, of humble origin, and a very superficial knowledge of the subject of L. contingencies—but he arranged his formulæ in the Columnar method. This was in his work, *Calculations deduced from First Principles*, etc., of which we have already given an account under ANNUITIES ON LIVES. His claim to be the originator of the Columnar method, although now very generally admitted by the best authorities, has been ignored until a comparatively recent period. This may have arisen from his work being so little known.

In 1779 Mr. Wm. Morgan pub. his *Doctrine of Annu. and Assu. on Lives*, etc. In explaining his mode of checking annu. values, he says : In making these calculations it will be convenient to dispose the operations into the following order :

The author further says :

In consequence of this arrangement it will be always found that the product of every number in the 2nd col., multiplied by the number even with it in the 3rd col., gives the number even with both in the 4th col. ; and this forms a proof, during the whole progress of the calculations, that there has been no error in any of the preceding calculations.

He concludes the chap. thus :

And as by these methods the calculations are rendered pleasant as well as expeditious, I hope that ere long some person will undertake them, choosing for his guide the *Northampton T.* of obs., which perhaps is better fitted for use than any other !

We have given this specimen of Mr. Morgan's arrangement chiefly in view of the remarks of Mr. E. J. Farren, which will follow under date 1844.

In 1785 Professor Tetens, of Kiel, in his work on *L. Annu.*, etc., pub. at Leipzig, says :

The methods of computation hitherto applicable to these subjects either lead to *nearly correct values*, being *methods of approximation*, or else they give such values quite correctly. Recourse was had to the former, because the latter appeared diffuse and laborious. But they are not so when one is but provided with the auxiliary tables which appertain to the calculation of int.

By means of a new auxiliary T., which can be made in accordance with the T. of mort. by which it is to be reckoned, and at the rate of int. proposed for its foundation, the whole labour, as well for L. annu. as for the mean duration of life, may be reduced to one division. The preparation of that T. requires nothing more than an easy addition when regard is had to the *duration of life only*, but demands somewhat more trouble if it be extended to the *calculation of life annuities*. It would not, therefore, be desirable to make it for one single annu. of the kind. *But then it gives simultaneously all values of life annuities, as well as all durations for every age at once.*

FIRST TABLE OF THE VALUES OF SINGLE LIVES.

Age.	Values of Lives.	Values of £1 payable, etc.	Sums.
92	0000000	·0000332	0000000
91	·480769	·0000690	·0000332
90	·711908	·0001436	·0001022
89	1·097377	·0002240	·0002458
88	1·512531	·0003106	·0004698
[and so on down to age 1.]			

He appends a specimen of his plan as applied to Sussmilch's T. of mort, remarking, "It is a model for others of a like description":

A Age.	B Living according to Sussmilch.	C The numbers in B discounted for the years of the age.	D Sum of the numbers in B added up- ward from beneath.	E Sum of the numbers in C added up- ward from beneath.
0	1000	1000	28.988	12437.48
1	750	721.15	27.988	11437.48
2	661	611.13	27.238	10710.33
3	618	549.40	26.577	10099.20
4	593	560.90	25.959	9549.80
5	579 &c.	475.90 &c.	25.366 &c.	9042.90 &c.

After giving some further examples, Tetens says:

I consider this method the most excellent of all, especially because one may also use the so prepared auxiliary T. with much advantage in the valuation of joint L. annu., as I will show hereafter. Besides, as col. C gives some trouble, one can deviate from it in regard to single L. annu. by an easier arrangement.

This latter he then proceeds to describe. Did he borrow the idea from Morgan? He admits his knowledge of the work of that writer, but says of Morgan's method, "I have not found it so easy or short as not to have had reasons for devising yet another, *and for preferring this latter method.*" This seems clear and conclusive.

The arrangement of Duvillard's French table pub. in 1806 embodies the Columnar principle; and Dr. Farr appears to consider him entitled to the credit of the improvement. Mathieu has given for some years in *Annuaire de France* a T. deduced directly from Duvillard's new column. It is the development, as Mathieu remarks, of a shorter T. in Duvillard's works.

The next person for whom the honour of the invention is claimed is Mr. George Barrett, of Petworth. [BARRETT, GEORGE.]

In 1810 Mr. Francis Baily pub. the first vol. of his famous work, *The Doctrine of Life Annu. and Assu.*, etc. The 2nd vol. did not appear until 1813; and it was in the appendix to that vol. that Mr. Barrett's name was brought so prominently forward as the inventor of the Columnar method. Mr. Baily says:

In order to preserve some record of Mr. Barrett's prodigious labour, as well as to explain the principles upon which his tables are constructed—principles which open a *new* and a wide field to the analyst, and which greatly abridge the labour of computation in some of the most intricate problems that occur in the science,—I drew up the following memoir, etc., etc.

Again:

The public are indebted to Mr. George Barrett, of Petworth, in Sussex, for this easy, expeditious, and ingenious mode of determining and arranging the value of L. annu.; and it is with his concurrence that I have drawn up this paper to explain the principles upon which it is founded, and to point out the advantages which attend it. I have been the more induced to enter upon this subject since it gives me an opportunity of perpetuating the name of one who, by his labours on this subject, has deserved so much from every person that is interested in the science: and at the same time of making known to the world the astonishing and beneficial effects that may be produced by perseverance and attention in so laudable a pursuit.

We have, in our art. ANNU. ON LIVES, under date 1812, spoken of an attempt made by Mr. Baily in that year to draw the attention of the Royal So. to Mr. Barrett's method, *but without success!* This circumstance will be again referred to presently.

Mr. Milne, who has by some been regarded as the champion of the old method, was not slow in discovering the advantages of the new. In the art. on Annu. in the 7th ed. of *Ency. Brit.*, 1813, he, speaking of Mr. Baily's work, says:

In an appendix to it . . . formulæ were given for calculating from T. of that kind [commutation T.] the values of temporary and deferred L. annu. and assu. When the annu., instead of remaining always the same, increases or decreases from year to year by equal differences, *with considerably greater facility and expedition than the same things could have been done with by the T. and methods of calculation in previous use.*

This is an impartial testimony of the highest value; and Mr. Gray has since pointed out that this testimony was based upon Barrett's method, "and gives but a faint idea of their capabilities in their improved form."

In 1815 Mr. Milne pub. his famed *Carlisle T.*; but he made no use of the method of which he had spoken so highly two years previously.

In 1821 Mr. W. Morgan pub. a 2nd ed. of his *Doctrine of Annu.*, etc., but he enters no claim to be the originator of the Columnar method, notwithstanding his knowledge of the attention which had been drawn to the subject.

In the 3rd Appendix to Mr. Charles Babbage's *Comparative View*, pub. 1826, that learned writer refers to Barrett's method, as expounded by Baily, and says, "As several of the T. at the end of this vol. are computed on those principles, the following investigations are subjoined." He shows the advantages of the method in a very succinct manner.

In 1825 was pub. Mr. Griffith Davies's *Tables of Life Contingencies*, etc., "the whole carefully calculated, *arranged in a new form*, and illustrated by practical examples." Mr. Davies's tract did not explain the use he had made of Barrett's method, nor the amplification he had made therein. [See hereon *Davies on Annu.*, preface.]

The following example will explain the arrangement of the *Carlisle* 3 p. c. T. for single lives, on Mr. Davies's plan, except that col. C is not usually included in the completed T. He introduced the M col. :

Age.	D	N	S	C	M	R
		183198·234	3885247·946			
0	10000·000	173198·234	3702049·711		4664·129	70035·672
1	8214·563	164983·671	3528851·477	1494·175	3169·954	65371·543
2	7332·453	157651·218	3363867·805	642·850	2527·104	62201·588
3	6656·740	150994·477	3206216·587	462·146	2064·957	59674·484
4	6217·632	144776·845	3055222·109	245·222	1819·735	57609·5272
⋮	⋮	⋮	⋮	⋮	⋮	⋮
101	·353	·434	·669	·101	·330	·745
102	·245	·189	·235	·098	·232	·414
103	·142	·046	·046	·095	·137	·182
104	·046			·092	·044	·044
105				·044		

The mode of placing cols. N, S and M, R "one step up" is known as the "terminal" arrangement, as distinguished from the "initial" arrangement, which places the D, N, S cols. on a line with age 0, and the C, M, R cols. one step lower. The former plan has been abandoned by later computers. It will be observed also that the cols. commence with the youngest, instead of the oldest age—a change introduced by Barrett, and commented upon, we think somewhat unjustly, by Mr. Farren.

It will be useful to give a brief popular description of the construction or purpose of each of these cols.

Col. D.—The number in this col. opposite any age, say 4, is equal to the product of the number represented by the mort. T. to attain the age of 4, into the present value of £1 due at the end of 20 years. And, generally, the number corresponding to any age in col. D is equal to the number who complete that year of their age, multiplied by the present value of £1 due at the end of as many years as are equal to the age.

Col. N.—This col. is formed from col. D, by inserting opposite to each age in N the sum of the numbers opposite all the higher ages in D. It follows from this that the last N in the T. is 0; also, that the first N is equal to all the Ds, except the first.

Col. S.—This col. is formed by inserting in it, opposite each age, the sum of the numbers in N opposite that age, and all the higher ages. It differs from D in including at each age the number corresponding to that age in the preceding col. It follows from this that the last S is 0, and that the first S is equal to the sum of all the numbers in col. N.

The preceding are the *annuity* cols. We now come to those termed the *assurance* cols.

Col. C.—This col. is formed by inserting opposite each age the product of the number who die in the following year of their age, by the present value of £1 to be received at the end of a number of years, which is equal to one more than the age in question. This col., which is essential to the theory of the T., is frequently omitted from the completed T. It is used only for the construction of col. M.

Col. M.—This col. is derived from C, precisely as S was derived from N.

Col. R.—This col. is formed from M, in exactly the same manner as M was formed from C.

In the *Companion to the [Brit.] Almanack*, 1840, appears a paper by Prof. De Morgan, in which the comparative merits of Barrett's and Griffith Davies's claims are disposed of as follows :

About 30 years ago, a Mr. George Barrett presented to the Royal So. a method by which the calculation of life contin. was very materially facilitated. This method the So. did not think worthy of pub.; and it was accordingly given to the world by Mr. Francis Baily, in the appendix to his well-known work on Annu., with some severe remarks on the omission just alluded to. It was certainly an unfortunate want either of examination or of judgment, which caused the *Phil. Trans.*, the depository of the writings of many eminent inquirers on this particular subject, to miss a contribution which would have done honour to any one of them. *This method of Barrett was rendered still more commodious, and we believe extended, by Mr. Griffith Davies, in his Tables of L. Contingencies, a work now unfortunately out of print.*

In Mr. Barrett's orig. method, which is still followed by some Act., are three cols. only, answering to D, N, and S, which by aid of the first three formulæ [set out by De Morgan] give C, M, R. The *great principle* of the method, viz. the formation of T. by which deferred, temporary, and increasing benefits are as easily calculated as those for the whole of life, *belongs to Barrett as much as the invention and construction of logarithms to Napier.* On the other hand, Mr. Griffith Davies, by the alteration presently noted, and the separate exhibition of M and R (he has not given C, which is of little use in practice, though essential to the theory), *has increased the utility and extended the power of the method to an extent of which its inventor had not the least idea; and has all the rest of the claim in the matter which is made for Briggs, in the adaptation of logarithms to practical use.*

In the *Companion to the Almanack* for 1842 Prof. De Morgan continued his paper of

1840, and therein he suggests an improved form of Joint L. Commutation T., such as was subsequently adopted by Dr. Farr in connexion with the *English L. Table* (No. 1). Prof. De Morgan had previously made the same suggestion in the *Philosophical Mag.*

In 1842 Mr. Peter Gray contributed to the *Mechanics' Mag.* a paper, *On the Construction and Use of Commutation T. for Calculating the Values of Benefits depending on Life Contingencies*. He, following the belief then prevalent, says:—"It is to a Mr. George Barrett, of whom nothing besides is publicly known, that we are indebted for the principle of the commutation T., and for the method of computing by means of them the values of benefits depending on the contingencies of human life." "By far the most valuable papers on the subject are two in the *Companion to the Almanack*, for 1840 and 1842, by Prof. De Morgan, which contain the materials of many thousand formulæ, applicable to almost every case that can occur." He points out the want of an elementary and systematic treatise upon the subject; and then proceeds to supply this want with remarkable clearness and ability. He reviews the peculiarities of the old and the new methods thus:

In the old method we are presented with a T. of the values of annu. at all ages, which of themselves are rarely wanted, but from which, by operations more or less complex, the values of benefits of all other kinds may be computed. In the new method, on the other hand, we are presented with a T. which by the mere inspection tells us nothing; but from which, while the values of the ordinary benefits can be found by a simple division, those of benefits of the most complex description are found by operations consisting usually of nothing more than one or two subtractions and one division. In point of simplicity, moreover, in the deduction of the various formulæ, the methods admit of no comparison. For the estab. of what, according to the old method, required chapters, a few pages will suffice according to the new.

Mr. Gray also points out the great facilities afforded by commutation T. for reducing single into ann. prems., as first indicated by Prof. De Morgan, and continues:

The principle upon which the application of the T. that we are now describing depends is so simple, that some may be disposed to award but a small portion of merit to the person by whom it was first pointed out. But as we are of those who believe that the merit of a contrivance is to be estimated in proportion to the utility of the object it has in view, and the simplicity and efficiency of the means by which that object is attained; and as the possession of those, in an eminent degree, by the contrivance in question, cannot be gainsaid, we take a very different view of the matter, and presume to think the contrivance one of very great merit.

In 1843 was pub. [under the superintendence of the So. for the Diffusion of Useful Knowledge] Mr. David Jones's work, *On the Value of Annu. and Rev. Payments*, in the preface whereof is the following:

In the part which treats of L. contin., resort has been had to Mr. Griffith Davies's mode of constructing T. of the value of annu., pub. by him in a small tract in 1825, and a variety of formulæ have been deduced therefrom of considerable utility in working numerous cases connected with L. annu. and assu. The advantage of this method is the use which is made of the elements employed in the calculation.

Mr. E. J. Farren, in his *Historical Essay*, etc. (1844), says:

It may be here allowable to incidentally notice that the original framing of the *columnn* system of calculation referred to has generally been attributed to the late Mr. Barrett, whose method was pub. in the form of an appendix to Mr. Baily's *Treatise on Annuities*, as re-issued in 1813. That we are principally indebted to this source for the prevalent adoption of the system is undoubted, but a prior embodiment of it will be found in the treatise of the late Mr. W. Morgan, published as early as the year 1799. The reader generally conversant with such matters will at once admit the correctness of this assertion by consulting p. 64 of Mr. Morgan's treatise, in which will be found a T. [this we have already given], which, though primarily offered merely for the purposes of rectification, has nearly all the inherent qualities of modern arrangements. . . . In page 70 the tabular values are adapted to the common denominator 1000, etc.; and in page 74 the system is extended to joint lives. . . . Mr. Barrett appears to have pursued this recommendation, and to have incidentally detected that the system was capable of further extension and uses, though his unnecessary adoption of the reversal of ages clearly indicates Mr. Morgan's treatise to have been the suggestive source. For the re-arrangement now current, and the addition of a decremental series (col. M), we are indebted to the discrimination of Mr. Griffith Davies, as instanced by his *Treatise on Life Contin.* (1825), of which the system referred to forms the leading characteristic.

In 1845 Dr. Farr appended to the 6th R. of Reg.-Gen. a *Summary of Results deduced from the English Life T.* That T. [No. 1] had appeared in the preceding Report. Dr. Farr, in the arrangement of that T., followed Barrett's method; but he enlarged upon it by adding col. Y, which possesses several curious properties. It is intended to throw light upon the progress of a pop. which grows partly by immigration. Its purposes are very fully set forth by the accomplished author.

In 1849 Mr. Peter Gray pub. his *Tables and Formulæ for the Computation of Life Contingencies* [first issue]; and in chapters 7 and 8 will be found a most learned analysis of the Columnar method. He says that Mr. Morgan's cols. possess *the whole* of the inherent qualities of cols. D and N in modern T.; but he adds, "Not only does he show himself unacquainted with the principal and most valuable properties of his cols., but we have no evidence that he arranged his materials in cols. at all, except merely for the purpose of exemplification." Finally, his making no claim to the discovery in the 2nd ed. of his work, pub. 1821, Mr. Gray considers conclusive against him. Regarding Mr. Griffith Davies he says, "The propriety of, or at least the necessity for, some of the modifications introduced by Mr. Davies may be questioned; but it is not denied that the method owes much to him." Finally, comparing the old method with the Columnar, he says, "In every instance the superiority belongs to the new."

In the Student's T. pub. in 1849 by Mr. W. T. Thomson, an excellent exemplification is given of the advantages of the Columnar system.

The first paper in the 1st vol. of the *Assu. Mag.* [1851] is a *Memoir of the Early Hist. of Auxiliary T. for the Computation of Life Contingencies*, by Mr. Frederick Hendriks. That learned writer there says, "The method was arrived at *separately* by English and by German authors, but the priority in the respective dates will be seen fairly to belong to the *latter*." He proceeds:

The circumstances to be brought forward in support of this view appear to have hitherto escaped any notice in England. There can scarcely be a doubt that when the late Mr. Francis Baily drew up his well-known *Memoir on Barrett's Formula*, which was read to the Royal So. in June, 1812, his practical mind and honourable endeavours to prevent, as he says, "Mr. Barrett's astonishing labours sinking into oblivion," offered a guarantee of his being perfectly unaware that formula, applicable to the same purposes and in a more complete form, had been pub. (though *not* in England) some 27 years *previously*; otherwise it may be justly presumed that he would not have characterized Barrett's invention as an entirely new one, or its principles as "opening a new and wide field to the analyst," without adding parenthetically—at least *new in England*.

In 1851 Messrs. Gray, Smith, and Orchard pub. *Three p.c. Assu. and Annu. T.* These were accompanied by auxiliary T. arranged on the commutation plan.

In 1853 Mr. W. T. Thomson pub. *Actuarial T. Carlisle Three p.c. single lives and single deaths, with Auxiliary T.* In this work will be found much practical and valuable information regarding the Columnar system.

In the 4th vol. of the *Assu. Mag.* (1854) there appears an art. by Prof. De Morgan: *Account of a Correspondence between Mr. Geo. Barrett and Mr. Francis Baily*. This profound scholar says therein, in his characteristic style:

It is as certain as anything can be that Barrett was a perfectly independent inventor. He knew neither French nor German; his own method was described by himself in 1811, when there was no question of a competitor, as having been worked at for 25 years—which brings the invention back to about the time when Tetens pub. . . . The chance of a work like that of Tetens finding its way into the hands of a Surrey yeoman, farmer, or country schoolmaster, in or about 1786, is very small indeed. Further, the work of Tetens acquired no notoriety in England. Milne, who knew the continental authors better than any one of his contemporary writers, does not allude to it in the summary given in the art "Annu." in the *Ency. Brit.*; nor is the book itself, to a cursory examiner, suggestive of anything new.

Tetens, as Mr. Hendriks has remarked, described the use of the cols. C and M, which Barrett did not do. [The M col. was first introduced by Mr. Griffith Davies.] It may reasonably be supposed that he saw the application of his own method; . . . but he makes no incidental remarks: even when he forms his cols. for the expectation of life, in explaining his method to Baily, he does not drop a word on the facility with which the temporary or deferred expectations may be found. The points of view of the two men differed greatly. Barrett was occupied with the production of vast results, and valued his method because it produced those results. Tetens exhibits an easier method of doing what others had already done, and does not seem greatly struck with the power of doing more which that method would give. Hence prob. the reason why Barrett did not care for such cols as C and M and R. He could not hope to repeat them in a T. of three joint lives: so that he was content with the facilities which his own D and N cols. gave to problems of rev. as well as to problems of annu. . . . Again, part of the merit of an invention consists in its mode of introduction. Barrett introduced his method by using the proper means: *Tetens so completely failed in introduction, that in all prob. he never would have been heard of in the matter if it had not been for Barrett's success.* . . .

In the present case, I have no doubt that to Barrett is due an acknowledgment of a much higher order than to Tetens. The first was a self-educated country farmer; the second was a highly-cultivated prof. of mathematics. The first invented his means of pub.; the second used those presented by his position. The first sacrificed a quarter of a century to his determination that the public should not only have the discovery, but the benefit of it; the second gave them the discovery, that those who pleased might benefit the public by it. The first succeeded in making his method of daily use, and of such notoriety that in process of time the discovery of the second was itself discovered; and the discoverer of the discovery deserves no small credit for his unusual research.

We should have been glad to hear De Morgan's views regarding Dale.

There is yet another passage in this paper which we must quote. It is a remarkable one:

The rejection of Baily's paper on Barrett's method by the Royal So. is one of those unfortunate instances which create a fear lest there should be other communications as valuable which have been also rejected, but have never found such a champion as Baily. *It is usual to attribute this rejection to the late William Morgan, who was at that time a member of the Council, and must doubtless have been on the Committee of Reference, unless his own sense of his peculiar position with respect to his assaiant induced him to decline the office.* But it must not be forgotten that the celebrated Thomas Young, an acute writer on annu., was also on the Council, and as prob. on the Committee. . . . Morgan and Price, as is well known, had at one time possessed a mastery over the subject of L. contin. which was almost (may I not say quite?) peculiar to themselves. Morgan himself, in spite of the occasional errors so sharply attacked by Baily, had greatly contributed to the advance of the science by his papers, and to the estab. of public confidence in it by his management of the *Equitable So.* *I think it may be said to be pretty well known that he had acquired a kind of feeling, that to meddle with the subject of annu. and assu. was to poach on his manor.* This weakness may have biassed him in his judgment of a new and strange method; but he must not bear the blame alone: it is the business of a so. to counteract the known bias of each individual member. . . . In the present case it was notorious that the author of the paper under discussion [Baily] had given great offence to the member of the Council who, under ordinary circumstances, would have been the best judge of its merits. *If the remembrance of that offence contributed to the rejection of the paper, the parties who permitted the result were more to blame than the individual whose natural anger had originated it.*

In 1856 Mr. W. T. Thomson pub. his *Proof-sheets* [from which the art. L. Assu., in the last ed. of the *Ency. Brit.*, was moulded into form], and he entered with some ardour into the investigation now before us. Regarding Dale he says, The arrangement of his calculations in a columnar form is "such as to render it extremely doubtful whether strict justice would not give him a share in the invention of that method." Then reviewing Dale's formulæ, he further says, "There is no doubt that he thus produced a D and

N col., but unfortunately only applicable to one age. Had he, too, made the calculation for every age till birth, he might have discovered the D and N process." Mr. Thomson was one of the first writers who drew attention to Dale in this connexion.

He considers Mr. Morgan "may be almost said to have discovered the D and N system without knowing it. He uses the discounted values, however, merely as a method of check, and those who peruse his explanations on the subject must feel convinced that he did not know the power of the D and N columns."

Regarding Tetens, reviewing the example of his arrangement we have already given, he says :

It is quite evident that these tables are computed on the D and N system, as contained in the works of Griffith Davies. Column C is identical with column D, and column E with column N, with this exception, that the summations are placed differently, agreeing in this respect with the arrangement of Barrett, as followed by Dr. Farr.

Of Barrett he says, "He has all the merit of an originator : his discovery having been entirely independent." Again, "Barrett and Tetens are the true originators of the system."

Then he turns to Griffith Davies : "Without his inventive genius the system of Barrett might have remained long unimproved ; but he re-modelled it, and although the *principle* is the same in both, he has so arranged his T. *that they may almost be said to be a new discovery.*

In 1858 Mr. David Chisholm pub. his well-known work, *Commutation Tables*, etc. The introduction to this work contains a most elaborate exposition of the advantages of the Columnar system, and its application to the solution of all the more generally required problems in L. contingencies. In the advertisement of this work, Mr. Chisholm said :

Since the introduction of Mr. George Barrett's method of constructing life T., and the subsequent improvement thereof by Mr. Griffith Davies, the peculiar advantages of commutation T., and the facilities which they afford to the computer, have never been so fully exhibited as they might have been had we possessed commutation cols. for *two lives*, corresponding in number and character to those now used for single lives. . . . The only commutation T. pub. for two lives, to any extent, are the D and N cols. of joint annu. by Mr. David Jones. . . . But these, being adapted only to questions of annu., are of little use in the solution of assu. questions, except by means of intricate formulæ, whose chief merit consists in producing a result only a little more exact than by the old method, and by a somewhat easier process. . . . The advantages of the commutation system, when confined to the latter cols. only [D and N], must consequently be greatly diminished, and the extent of its operations circumscribed and restricted so long as we do not possess the necessary M and R cols. for two lives for the cognate branch of assu.

He then announces that he has prepared a series of T. to supply this want, adding, "The value of *survivorship* commutation T. is, however, much greater than can be here shown, and they will be found particularly useful in all problems involving a return of prems. paid, either in whole or in part, should the contin. provided against not happen."

In 1863 Mr. Samuel Brown pub. *Report on Madras Military Fund*. The auxiliary T. were arranged on the Columnar method.

In 1868 Mr. James Chisholm read before the Inst. of Act. a paper, *On the Arrangement of Commutation, or D and N Tables* ; and the same is printed in vol. xiv. of *Assu. Mag.*, p. 200. This is an especially useful and practical paper. It explains the discrepancies of previous computers on the Columnar method, and accounts for them. In this way it forms a connecting link between all the British computers on this method, except Dale. To the student such a paper is of the greatest value.

The Columnar Method may now be said to have entirely superseded all other modes of constructing auxiliary or preparatory T. ; and that it has abridged [commuted] the labour of many processes of the actuary, and so aided in the practical development of the science of L. contin., is admitted on all hands. [AUXILIARY T.] [COMMUTATION T.] [PREPARATORY T.]

COLVIN, ALEXANDER, Actuary and Journalist.—In 1852 he pub., *Actuarial Fugments Exploded* ; *Letter to the Rt. Hon. J. W. Henley in Defence of the Life Assu. Offices*. In 1853 he was Act. of the *United Mut. Mining*. In 1854 he found himself in a dispute with the Inst. of Act., in which he was considerably "worsted." About 1855 he became editor or joint editor of the *Weekly Chronicle and Register*, a journal which devoted some attention to ins. matters. In 1856 he was Act. and Sec. of the *Brit. Exchequer*. In 1858 he became Sec. of the *Brit., Foreign, and Colonial*. He has now, we believe, retired from ins. pursuits.

COLVOCORSES' INS. CASE.—The case of Captain Colvocorses, of Litchfield, State of Connecticut, who was found dead in the street at Bridgeport, in the same State, on the night of 3rd June, 1872, is at the present moment engaging much attention. He was ins. at the time of his death for about £39,000 (\$195,000)—the pol. being in many of the best ins. offices of the U.S. His means were slender ; the ins. only quite recently effected. All the main circumstances point to this being a most elaborately arranged suicide. [INS. FRAUDS.]

COMA (properly *Koma*, from the Greek, *drowsiness*, and *to lie*).—Drowsiness ; lethargic sleep ; dead-sleep ; torpor.

COMATOSE [*Komatose*].—In deep sleep ; a term implying a morbid condition of the brain, attended with loss of sensation and voluntary motion.

COMBINATIONS.—A term used in algebra, to designate the different arrangements of a number of objects (letters) into groups of a given nature. The theory of Combinations

is closely connected with the theory of Prob. The earliest reference to combinations is contained in the works of William Buckley, who lived in the time of Edward VI.

A book was pub. in Antwerp, in 1617, by Erycius Puteanus, under the title, *Erycii Puteani Pietatis Kaumata in Bernardi Bauhusii Jesu Proteum Parthenium*, from which it appears that Bernardus Bauhusius had composed the following line in honour of the Virgin Mary :

“Tot tibi sunt dotes, Vergo, quot sidera cælo.”

This verse had been arranged in 1022 different ways, and had drawn much attention. The modes of arrangement had not all been exhausted, because Bauhusis expressly rejected all those which would have conveyed a sense inconsistent with the glory of the Virgin Mary. What came of all this in relation to the development of the theory of combinations is well told by Todhunter in his *Hist. of the Mathematical Theory of Prob.*

James Bernouilli, in his *Ars Conjectandi*, says he found there could be 3312 arrangements of the preceding without breaking the law of metre.

In the work of Schooten, pub. 1658, some very slight remarks on combinations and their applications are given.

The earliest treatise on combinations now generally known is that of Pascal, given in his *Arithmetical Triangle*, pub. 1665.

In 1666 Leibnitz pub. a work, *Dissertatio de Arte Combinatoria*.

In 1693 Wallis's *Algebra* was pub. Appended thereto was a tract, *A Discourse on Combinations, Alternations, and Aliquot Parts*, wherein he quotes the passage from Buckley already noticed. Wallis's work was reprinted by the Baron Maseres in his collection of reprints, 1795, pub. under the title of *The Doctrine of Permutations and Combinations, being an Essential and Fundamental Part of the Doctrine of Chances*.

Simpson's *Nature and Laws of Chance*, pub. 1740, contains a chapter, “The Doctrine of Combinations and Permutations clearly deduced.”

In preface to 3rd ed. of De Moivre's *Doctrine of Chances*, pub. 1756, the author says :

Having explained the common rules of combination, and given a theorem which may be of use for the solution of some problems relating to that subject, I lay down a new theorem, which is properly a contraction of the former, whereby several questions of chance are resolved with wonderful ease, though the solution might seem at first sight to be of insuperable difficulty.

Todhunter says this new theorem did not amount to much.

COMBINED EXPERIENCE TABLES.—See EXPERIENCE TABLE OF MORT. (Nos. 1 and 2.)

COMBINED LIFE AND ACCIDENT POLICIES.—It has been one of the wants of the present age, and is, indeed, the completing link to the usefulness of both accident ins. and life assu., that they should offer their combined advantages in one pol. Life assu. is a thing for the *future*, accident ins. for the *present*. A combination reaches both the present and future. A man may have his life assured, but if a serious injury happen to him his income may cease, and his L. pol. lapse by reason of non-payment of prem. But if his pol. secure him an income while disabled from work, it provides the means for keeping itself in force. Our American cousins have been shrewd enough to discover this, and combined life and accident ins. is now a leading and settled fact there. In England we are more slow. At last the advantage may be secured here. The *Colonial Assurance Corporation* has prepared tables, and, indeed, perfected a scheme of combined accident and life assu. which appears perfect in its details, and which is already receiving considerable support. The additional prem. required for the accident portion of the risk is so small, and the advantages offered so considerable, that the project must command attention.—*Accident Record*.

COMBUSTIBLE (from *comburo*, to burn; or, *I set on fire*).—The designation of a body which is capable of combining with oxygen, with the evolution of heat and light. *Non-combustibles* are, in conventional language, bodies which do not burn, but support the combustion of other substances.

COMBUSTION.—This word, in its direct sense, means *burning*; but it is frequently used in another sense, viz. instead of *ignition*, which signifies the property of *taking fire*. This distinction is material; but having noted it, we must proceed to speak of combustion in the sense generally understood. It resolves itself under two heads, so far as our subject is concerned, viz. COMBUSTION, HUMAN; COMBUSTION, SPONTANEOUS.

COMBUSTION, HUMAN (sometimes designated “Præternatural Combustion of the Human Body”).—Among the many “causes of death” which we have occasion to review in this work, none presents such remarkable features as that of the so-called combustion of the human body. Our first idea was to discard it as altogether improbable; but upon looking into the authorities, they seem too strong for such a course. Our next duty, therefore, is to present a very brief outline of the cases recorded, and the opinions of the principal writers on the subject. We do not find any such deaths recorded in our own Reg.-Gen. reports.

The first discoverer of this phenomenon is said to have been Andrew Vulparius, Prof. of Anatomy at Bologna in 1669; but this can hardly be reconciled with the fact that Lord Bacon, in his *Universal Nat. Hist.*, pub. 1622, says, “Such flames would often arise in us if the natural moisture did not quench them.”

In the *German Ephemerides*, pub. 1670, there occurs under observation 77 the following : “Very strong fires may be kindled in our bodies, as well as in other animals of a hot

temperament, not only by nature, but by art, which being able to kill, will serve for a better proof of my argument." Again: "In the northmost countries flames evaporate from the stomachs of those who drink strong liquors plentifully."

Marcellus Donatus says that in the time of Godfrey of Boulogne's Christian war in the territory of Nivera, "People were burning of invisible fire in their entrails, and some had cut off a foot or a hand where the burning began, that it should not go further!"—*Mirab. Hist. Medic.*, where other equally extraordinary, and we may add incredible, instances are given.

In the *Hist. Royal Academy of Sciences*, 1706, p. 23, it is stated, upon the authority of M. Litre, such a drying up may be caused in our body by drinking rectified brandy and strong wines, if mixed with camphor. He was speaking of the dissection of a woman, aged 45, who was said to have been so consumed.

Sanctorius stated that numbness is an effect of too much internal heat, and also that the friction of the palms of the hands, or of any other parts of our body, may produce those fires, "commonly called" *ignes lambentes*!

In 1763 Bianchini, prebendary of Verona, pub. *An Account of the Countess Cornelia Bandi, of Cesena, who was Consumed by a Fire kindled in her own Body; with an Inquiry into the Cause, supported by instances of a like nature.* The lady was in her 62nd year, and well until the incident narrated. "The fire was caused in her entrails by inflamed effluvia of her blood, by juices and fermentations in the stomach, and many combustible matters abundant in living bodies for the uses of life; and lastly by the fiery evaporations which exhale from the settling of spirits of wine, brandies, etc." The writer adds, "Although the salts in living and vegetable creatures are not naturally inclined to kindle, they often contribute to it when joined by a strong fermentation."

In the *Gents. Mag.* for 1763, it is recorded of three noblemen of Courland, who drank by emulation, strong liquors, that two died "scorched and suffocated by a flame forcing itself from the stomach."

In the *Phil. Trans.* for 1775 will be found *An Account of a Woman accidentally burned to death at Coventry, by B. Wilmer, Surgeon at Coventry, in a Letter to Mr. William Sharp.* Mary Clues, aged 52, was much addicted to drinking. She would drink as much as four half pints of rum undiluted in a day. Her health declined; she had jaundice; took to her bed, but still drank. She was found one morning in bed, entirely consumed except a portion of her legs. "There were not the least remains of any skin, muscles, or viscera. The bones of the skull, thorax, spine and the upper extremities were completely calcined, and covered with a whitish efflorescence!"

Many details of this case will be found in the *Ann. Regis.* for the year named. The writer there says the only way he can account for her death is that her clothes accidentally caught fire, and "that her solids and fluids were rendered inflammable by the immense quantity of spirituous liquors she had drunk; and that when she was set fire to she was probably very soon reduced to ashes, *for the room suffered very little!*"

In the *Quart. Journ. of Science and Art*, for 1829, pub. by the Royal Inst. of Gt. Brit., there appeared the following:—"Human combustions do not depend upon the combination of the oxygen of the atmosphere, because, 1st, there is not sufficient heat evolved; 2nd, there is not the production of a charcoal requiring a high heat for its incineration; 3rd, there are no ammoniacal products formed. The effects appear to depend altogether upon a new arrangement of the elements previously existing in the human body."

The following instance is recorded in the *Encyclo. Brit.* 8th ed. (1854):

A woman about 60 years of age, in the county of Down, Ireland, retired to bed one evening with her daughter, both in a state of intoxication, as was their constant habit. A little before day-break some members of the family were awakened by an extremely offensive smell that pervaded the house, and which was observed to proceed from the apartment in which the old woman and her daughter lay. The smoke was found to proceed from the body of the old woman, which appeared to be burning with internal fire. The body was as black as coal, and the smoke appeared to proceed from every part of it. The combustion was arrested with difficulty, though there was no flame. Her daughter, who slept in the same bed, sustained no injury, nor did the combustion extend to the bed or bed-clothes, which were quite uninjured, though stained with the smoke. This case is related by Dr. Apjohn.

The writer of this art., after reviewing the several theories which have been put forward on this subject, concludes, "It must, however, be confessed that as yet the cause of this strange occurrence has not been satisfactorily ascertained."

M. Marc, a French physician, supposed the phenomena to be caused by the generation of inflammable gaseous products within the tissues of the body; and provided one of these gaseous products were oxygen, it is quite conceivable that such might lead to the combustion of the body. As phosphorus occurs as a large constituent of some of the tissues, if we suppose that phosphuretted hydrogen (a gas which takes fire whenever it comes in contact with the oxygen of the air) is the inflammable gas generated, and that it fills the bowels and pervades the tissues, it would both account for the rapidity and spontaneity of the combustion.

That great authority, Duglison, speaking of the cause of this combustion, says, some suppose that there is an atmospheric impregnation of the body, and that the actual contact of fire is necessary to produce it. But there is, he remarks, no proof of such a saturation of the organs; and if it were so, it would not—judging from experiments—

render the body combustible. Another theory refers the combustion to the agency of electric fluid. It is difficult, however, on this hypothesis to explain the rapidity of the combustion, and the complete reduction of the body, or its parts, to ashes.

In the *Emporium of Arts and Sciences*, vol. I., will be found an art. by M. Pierre Aime Lair, *On the Combustion of the Human Body by the long and immoderate use of Spirituous Liquors*. This writer thinks that the phenomenon is occasioned by an alcoholic impregnation of the body, and that actual contact with fire is then necessary to produce it. Other continental writers, as Maffie, Le Cat, Kopp, and Marc, attribute it solely to the agency of electric fluid.

Mr. Wyatt Papworth, in his *Notes on Spontaneous Combustion*, 1855, says, "The term has been generally applied to the wonderful ignition of the human body, *the causes of which seem now to be fully understood*." He treats of the subject in relation to F. ins.

Beck, in his *Elements of Medical Jurisprudence* (first pub. 1823), gives an epitome of a good many cases of this character, and he quotes the authorities from which he has derived them. This writer has pointed out that the cases here spoken of differ from ordinary combustion, which require large quantities of fuel to convert the body into ashes, and is also slow in its progress, and the heat required being high, extends itself to surrounding substances. It is often incomplete, and particularly so as to the bones. There will be blisters, scars, etc., on various parts of the unconsumed body.

Dr. Mitchell has also written upon the subject in the *American Medical Recorder*.

Dr. James Bell Pettigrew, M.D., of Edin., in his able paper *On the Presumption of Survivorship*, pub. in the *Brit. and For. Medico-Chirurgical Review* for Jan., 1865, says :

In death by spontaneous combustion the changes induced in the system by the free use of ardent spirits are such that a body, in a manner but little understood, becomes ignited and is with difficulty extinguished. As, however, the examples of spontaneous combustion are very rare, . . . it may be passed over by simply remarking that it is most common among females, and when it occurs the trunk is usually completely destroyed, the extremities being only destroyed in part.

In the 4th ed. of Wharton's *Law Lexicon*, 1867, there is a very learned art. upon the subject. The writer says a question may arise as to this being the cause having operated "where persons are found burnt to death." We think we should only resort to this theory when every other failed. He gives a very able summary of the deductions which have been drawn from the cases of this character already recorded :

1. The subjects were nearly all females, and they were far advanced in life.
2. Most of them had for a long time made an immoderate use of spirituous liquors, and they were either very fat or very lean.
3. The combustion occurred accidentally, and often from a slight cause, such as a candle, a coal, or even a spark.
4. The combustion proceeded with great rapidity, usually consuming the entire trunk, while the extremities, as the feet and hands, were occasionally left uninjured.
5. Water, instead of extinguishing the flames, sometimes gave them more activity.
6. The fire did very little damage to, and often did not affect, the combustible objects in contact with the human body, at the moment when it was burning.
7. The combustion of these bodies left as a residuum, fat, foetid ashes, with an unctuous, stinking, and very penetrating soot.
8. The combustions have occurred at all seasons, but most frequently in winter, and in northern as well as in southern countries.

In the *L'Union Médicale* for 1870 is an article from the pen of Dr. Bertholle, wherein full details are given of a case of spontaneous combustion. The subject of it was a woman, 37 years old, who was addicted to alcoholic drinks. She was found in her room with the viscera and some of the limbs consumed, the hair and clothes having escaped. The very minute description of the state in which the deceased was found shows that ignition could not have been communicated from without, and, to all appearance, this is an additional case to those already upon record.

In the *Scientific American*, in 1870, appeared a letter from Mr. A. B. Flowers, of Alexandria, Louisiana, that a statement made in other recent articles on this subject to the effect that no one had ever witnessed a case of spontaneous combustion in the human body was a mistake, as he was himself, with several others, an eye-witness to a case of the kind. The person who was the victim was a hard drinker, and was sitting by the fire, surrounded with Christmas guests, when suddenly flames of a bluish tint gushed from his mouth and nostrils, and he was soon a corpse. The body, he states, remained extremely warm for a much longer period than usual. This hardly meets the case of entire consumption of the body, as stated in several instances above given.

The ins. offices which might be prejudicially affected by deaths of this character are L. cos. and accident cos. We do not think they need raise their rates in consequence.

COMBUSTION, SPONTANEOUS (Fire).—The power of ignition inherent in animal and vegetable substances ; or combustion that is set up between two bodies at common temperatures with any application of artificial heat. It has long been known that vegetable substances, when either highly dried, or insufficiently dried, and closely packed, will ignite by their own spontaneous action. But it is also known by the experience of fire ins. offices that many other substances are endowed with the same dangerous properties. We intend noting various well-authenticated examples, as one of the best means of furnishing practical instruction.

In our art. on COALS, we have given some scientific evidence regarding their liability to spontaneous ignition.

Oil has always an affinity for the oxygen of the atmosphere, but when the former is in a body, leaving only a small surface exposed, scarcely any action can take place ; it is only when vegetable substances, as flax, cotton, and such loose fibrous materials, are

mixed with it (other conditions being favourable), that ignition takes place. It is also most certain to be effected when the situation of the heaps is rather confined, or at least not exposed to any great currents of air by which the temperature can be rapidly reduced. There is no doubt that many fires in former times could have been attributed solely to such an origin. It has been noticed that most if not all the experiments and disasters arising from contact of combustible materials have been accompanied by a very offensive smell.—*Papworth*.

The first recorded case of fire from spontaneous combustion—there must have been many previous cases unrecorded—arose in 1781 at Cronstadt, on board a frigate in that harbour. At the time of the frigate taking fire, there were several packages of matting tied with packthread, in which the soot of burnt firwood had been mixed with oil for painting the ship, and had been lying for some time on the floor of the cabin, where the fire was first perceived. In consequence a trial was afterwards made of 40 lbs. of firwood soot, soaked in about 35 lbs. of rape oil varnish. It was tied up in a bass mat and placed in the cabin of a ship. In 16 hours it heated and smoked, and until 20 hours kept steadily increasing in heat, when air was admitted into the cabin, and the whole heap burst into flame.

The scene of the experiments was varied. The materials experimented upon were placed in houses, in chests, in vaults; and with similar effect, for as soon as air was admitted, flame was produced. They all succeeded better on bright than on damp or dull days. It was found that the soot of wood was not requisite to produce flame; it only increased the power of combustion. Chimney-soot used instead of lampblack or wood-charcoal was found to retard the action.

It will be remarked that it is nearly a century since these experiments were made. Is the knowledge of these facts general among ins. agents?

In 1793 the Rt. Rev. Richard Watson, Bishop of Llandaff, pub. *Chemical Essays*, and therein he narrates the following experiment by Mr. Lemery, respecting the origin of subterranean fires. We quote it, because we think it illustrates our subject:

He mixed 25 lbs. of powdered sulphur with an equal weight of iron filings, and having kneaded the mixture together, by means of a little water, into the consistence of a paste, he put it into an iron pot, covered it with a cloth, and buried the whole one foot under ground. In about 8 or 9 hours the earth swelled, grew warm, and cracked; hot sulphurous vapours were perceived; a flame which dilated the cracks was observed; the superincumbent earth was covered by a yellow and black powder; in short, a subterraneous fire, producing a volcano in miniature, was spontaneously lighted up from the reciprocal actions of sulphur, iron, and water.

In another place the learned author says, "Half a pound of steel filings, half a pound of flour of brimstone, and fourteen ounces of water, will, when well mixed, acquire heat enough to make the mass take fire."

Murray, in his *System of Chemistry*, 1806-12, says:

This absorption of oxygen by fixed oils may, under certain circumstances, be so rapid as to evolve heat sufficient to cause them to burn. Many instances of spontaneous combustion had occurred from this cause. . . . It appears from these that if hemp, flax, or linen cloth, be steeped in linseed oil, if it lie in a heap, and be somewhat pressed together and confined, its temperature rises, a smoke issues from it, and at length it takes fire. The same thing happens with mixtures of oil and fine charcoal, as lampblack, wrapt up in linen. In one experiment, a mixture of this kind became warm in about 16 hours, and emitted steam; in two hours more it emitted smoke, and immediately took fire. In another the combustion happened in nine hours. The experiment succeeded only when drying oils were used.

Henry, in his *Elements of Experimental Chemistry*, 1810, said:

The fixed oils, such as are obtained by pressure from certain vegetables, as the olive, almond, linseed, poppy seed, rape seed, etc., have a singular property, which has led sometimes to serious accidents. When mixed with lampblack, or with any light kind of charcoal, and even with vegetable substances, as cotton, wool, or flax, the mixture after some time heats spontaneously, and at length bursts into flame. This combustion has sometimes been observed to take place in the waste cotton employed to wipe the oil from the machinery, and has prob. occasioned many of the dreadful fires which have happened in cotton mills, and for which no adequate cause could be assigned.

On the 8th July, 1815, about 25 pieces of cloth, each of which contained nearly 30 ells, were deposited upon wooden planks in a cellar at Lyons, for concealment. In their manufacture 25 lbs. of oil had been used for a quintal of wool. The cloth was quite greasy, and each piece weighed from 80 to 90 lbs. The cellar had an opening to the north, which was carefully shut up with dung, and the door was concealed by bundles of vine-props, which freely admitted the air. On the morning of the 4th Aug. an intolerable smell was observed, and the person who entered the cellar was surrounded with a thick smoke, which he could not support. Entering afterwards with a lantern, he perceived a shapeless, glutinous mass, apparently in a state of putrefaction. He then removed the dung from the opening, and as soon as the circulation of air was estab. the cloth took fire. In another corner of the cellar lay a heap of stuffs which had been ungreased, and prepared for the fuller, but they suffered no change.—*Quarterly Journ. of Arts*, Oct., 1820.

Fyfe, in his *Elements of Chemistry* [about 1820], says:

The fixed or unctuous oils absorb oxygen; linseed oil, for instance, when spread on paper, has been found to imbibe not less than twelve times its weight of it. Under certain circumstances the absorption goes on so rapidly that the heat generated is sufficient to cause combustion. *When, for instance, tow or cloth is soaked in oil, and heaped together, its temperature very soon rises, and it at last takes fire.* Hence the necessity of being cautious in throwing aside tow or other matters which have been used for cleaning the oily parts of machinery, as instances have occurred of fires being occasioned this way.

It ought, from this explanation, to have been understood how it was that shoddy mills were found to be such dangerous risks for fire offices.

On the 10th Aug., 1833, a memorable fire occurred at the north-west stores of the Dublin Custom House. The property destroyed was estimated at £300,000. The cause of the fire being involved in some mystery, the Gov. offered a reward, first of £300, and afterwards a further sum of £1000, but no satisfactory information was obtained. An inquiry was then instituted. It was proved that there were stored at the time of the fire a number of bales of carded Leghorn rags, some of which had been used by the porters to cleanse their oily hands. Also a quantity of bark, tallow, valonia, old ropes, 36 bales of cotton-wick, a lot of empty puncheons, etc. There were also some palm-oil, cotton and wool, two bales of hemp, etc. The palm-oil was said to be "as solid as butter." These were stowed where the fire was first seen. The result of the inquiry showed that there were abundant materials from which the fire might have originated through spontaneous ignition, to which no doubt it owed its origin.

Caunter, in his *Handbook of Chemistry*, pub. 1840, says :

The other point I have to mention is the combustion of vegetable substances, said to be caused by fermentation. The theory of this phenomenon does not seem properly understood by those who have not made natural science an object of particular study. When masses of vegetable products are put together in a confined place, without being sufficiently dry, they ferment or heat, as it is called, until they take fire. Such is the case, for instance, with wet hay made into a rick or mow, and damp cotton stowed away in the hold of a ship. The fermentation which thus occurs is no other than the vinous, arising from the joint action of the sugar and zimomin contained in these vegetable products. Carbonic acid, by its formation, raises the temperature very high, if the mass be large; but not high enough to produce combustion, as it is supposed to do in these cases. I have before said that liquidity is indispensable for fermentation. The limited quantity of moisture existing in a half-dried vegetable product is therefore the occasion of only an imperfect fermentation; but there is a liberation of the elements, oxygen, hydrogen, and carbon, besides the formation of carbonic acid. There may be, and there no doubt is, carburetted hydrogen, because it exists, ready formed, in the vegetables. These elements are naturally under very considerable pressure, which increases as they are liberated, because there is no outlet for their escape. When, therefore, the pressure has reached a certain point, the oxygen and hydrogen are forced to obey their affinities: a partial, and perhaps slight explosion takes place; the gases are kindled, in the formation of the water, and the whole mass of vegetable substance is ignited. If a hay-mow, however wet, were perforated with stakes or poles to make holes for the escape of the gases, no combustion could take place.

In the *Illustrated Lond. News*, 28th May, 1842, there is the following narrative :

A few days since a remarkable case of spontaneous combustion of a bed occurred at Leamington, . . . in one of two bedsteads in a bed-room, one on which there were two beds—the one a palliasse, and the other what was supposed to be a hair-mattress. It was promptly extinguished by the application of water, when it was ascertained that a hole about 8 inches in diameter had been burned completely through the floor under the bed; and on examining the bedding, a corresponding circle of combustion was found both in the mattress and palliasse. The former turned out on examination, instead of hair, to have merely a thin superficial covering of this substance, the interior being made up, amongst other things, of roughly broken flax, tow, and oakum, which substances only required the contact of oil or grease to ignite of themselves. . . . The fire, after having commenced in the tow or other contents at the under-side of the mattress, thence burned downwards through the palliasse—the straw and ignited materials setting fire to the floor, and thence to the curtains and hangings. . .

The *Times* of 8th July, 1853, contained a letter from a correspondent, who gave his name and address, and set forth the following facts :

Yesterday I had about 20 yards of stout unbleached calico sewn together in three lengths, for the purpose of making a sort of tarpauling; and, to make it water-proof, I placed it in a large earthen pan, and poured a quantity of boiled linseed oil over it. To avoid the smell, I directed the servant to take it into the saddle-room last night. This morning I was surprised to find it smoking hot, quite black, and just ready to burst quite into a flame. The servant says it was very hot last night, but he did not think of mentioning it. I have tried the same operation before with smaller pieces of calico, without any such result.

On the 5th Sept., 1853, a fire occurred in Cannon-street West. On the circumstances of the fire becoming the subject of a judicial investigation, Dr. Letheby, Prof. of Chemistry at the Lond. Hospital, was examined and said :

I procured samples of the different kinds of lucifer matches sold at the defendant's warehouse. I now produce some, but not the whole, as some of them had spontaneously ignited as they lay on my laboratory table. I have analysed the chemical materials of which they are composed, and find them to be chiefly phosphorus and chloride of potash, glue, and red oxide of iron. I have made experiments for the purpose of ascertaining the conditions under which they will prob. ignite, and find that the phosphorus, itself one of the chief constituents, takes fire spontaneously when in fine powder and exposed to the air. The temperature of this or of any other room is sufficient to fire phosphorus spontaneously when in a powdered state on the surface of the lucifers. [The witness here showed the experiment.] When I put this liquor on a piece of paper it evaporated, and there was left a fine powder, which ignited spontaneously. I then made another experiment with the lucifers. I exposed them to a temperature of 140 degrees, and found that they then fired. Such a temperature is very likely to exist in a window in summer time, unless the atmosphere is excluded, and then it requires a higher temperature, viz. one of 220 degrees. Slight friction will also set lucifers on fire: for example, the shaking of a parcel containing them, or the box being knocked down by rats, or other cause.

The *Builder* for 1854 contains an account of a fire at Gloucester Cathedral, from which we take the following passages :

Shortly before the occurrence of the fire, the workmen, who had been engaged in polishing the throne and other carved woodwork in the choir, left off, it being 6 o'clock P.M. The men had been employed in applying boiled oil and turpentine in equal proportions to the woodwork, rubbing it dry with cotton rags, chiefly portions of old cotton stockings. Then after use they placed them in a rush basket, and set it in the pew in front of the throne. This was exactly the place where the fire broke out three hours afterwards. It was supposed the men had used fire; . . . all denied that any fire

or match had been used by them on that day. Experiments were therefore made with the view of ascertaining distinctly whether the fire might have been caused by spontaneous combustion. The men employed placed their rags (saturated with oil and turpentine) in a rush basket, as before. In an hour the outside of the basket was found to be warm, and soon after the rags began to smoke. In two hours a continuous and strong cloud of smoke escaped from the basket, and in three hours the whole burst into a flame.

A second experiment was tried with a like result. Hence fires in cabinet-makers' risks.

In 1855 Mr. Wyatt Papworth, Surveyor of *Alliance F. office*, pub. a little pamphlet, *Notes on Spontaneous Combustion: an Appendix to Notes on the Causes of Fires in Buildings*. The author says:

By far the most important of all natural causes of fires, and the one which is chiefly referred to in works on chemistry, is the combustion which is now most satisfactorily ascertained to take place where lumps of hemp, flax, or cotton, more or less oiled or greased, are thrown down or placed carelessly together. This question materially affects the preservation of all manufactories, particularly where machinery is employed; for it will be seen herein that even soiled rags used by engravers and printers in cleaning their printing plates are subject to spontaneous combustion if allowed to remain heaped together for a few hours. *The natural ignition of vegetable bodies, however, does not appear to have met with much popular attention.*

We have in this art. quoted many of the examples given by this author.

In the 8th ed. of *Encyclo. Brit.*, vol. 14, pub. 1857, there is the following: Spontaneous combustion may arise in inert matter from—1. *Friction or percussion*, by which the latent heat of bodies is suddenly converted into sensible heat. 2. By *fermentation* of vegetable matter, as in the firing of new hay, of collections of linen rags, roasted bran, and powdered charcoal; in which the heat excited appears to be owing to the rapid absorption of watery vapour, which, when condensed, gives out its latent caloric in sufficient quantity to cause ignition. 3. By *chemical action*—as in the effect of drying oils on hemp, flax, cotton, and on some powder—as on that of charcoal and black oxide of manganese; the action of nitric acid on essential oils, indigo, etc., or the mixture of oil with wool.

In the 6th ed. of Ure's *Dict. of Arts*, etc., pub. 1867, and edited by Robt. Hunt, we find the following:

Cases of spontaneous combustion are by no means uncommon. Some years since the ed. investigated the conditions under which H.M. ships, the *Imogen* and *Talavera*, were burnt in Devonport dockyard, and he was enabled to trace the fire to a large bin, in which there had been allowed to accumulate a mass of oiled oakum, pieces of old flannel covered with anti-attribution, sawdust, shavings, and the sweepings of the painters', wheelwrights', and some other shops.

In 1868 was pub. Watts' *Dict. of Chemistry*, wherein this subject is treated of in considerable detail.

One of the articles which has lately [1872] shown a considerable tendency to spontaneous combustion is manufactured silk. The reason has since transpired. Many of the silks manufactured in France and Belgium go through the process of being "charged"—that is, they are treated with grease or oil for the purpose of increasing their weight and apparent value. These "charged silks" are now known to be so combustible that the German Railways have refused to receive them for transportation. It is to be hoped their fraudulent manufacturers may find "transportation" more readily.

The burning, in 1872, of the Continental Sugar House and Refinery in South Boston, U.S., was believed to be due entirely to spontaneous combustion in a lot of sugar boxes which had been stowed away uncleaned.

Charcoal alone, in some states, appears to be susceptible of spontaneous inflammation, when it is laid in heaps or subjected to trituration, of which Sager has given examples.—*Nicholson's Journal*. [CHEMICAL PRODUCTS.] [COALS.] [FIRE ANNIHILATORS.] [GUANO.] [LIME.] [LUCIFER MATCHES.] [OILS.] [SOLAR IGNITION.]

COMETS.—It is and long has been a popular notion that Comets have an influence in promoting epidemic diseases. Hippocrates appears to hint at comets being attended by physical convulsions of the earth; and it has since been ascertained that each of two comets which appeared in his time was attended by an earthquake. [EARTHQUAKES.] It is recorded that fearful earthquakes, fiery meteors, and terrestrial commotions of all descriptions preceded the plague of 1348. [PLAGUES.] Hecker, in his hist. of *Epidemics of the Middle Ages*, states that comets were seen in 1505 and 1506, and that an eruption of Vesuvius took place in 1506, the year of the second visitation of the *sweating sickness* in England. The third visitation of this sickness was in 1517—a comet appeared in 1516. Other serious epidemic diseases occurred in Europe in 1517. In the year 1529 sweating sickness occurred for the 5th time in England. Hecker says, "Comets appeared in the course of this year in unusual numbers." Dr. Theophilus Thompson, the ed. of the *Annals of Influenza*, remarks that comets repeatedly attracted attention about the time of catarrhal epidemics, especially near the visitations of 1510, 1557, 1580, 1732, 1737, 1743, and 1762. It is certain that in the pestilential year 1854 a comet appeared on 29th March. "How comets should influence epidemics is by no means a question likely to be solved yet."—*Haviland*. Halley, of ins. fame, first fixed the identity of comets, and predicted their periodical return. [EPIDEMICS.]

COMITY OF NATIONS.—The most appropriate phrase to express the true foundation and extent of the obligation of the laws of one nation, within the territories of another.—*Story*.

COMMANDITE [or *in commendam*].—A form of limited partnership, very prevalent in France. The principle applies to cases where the contract is between one or more persons, who are general partners, and therefore jointly and severally responsible, and one or more other persons who merely furnish a particular fund or cap. stock, and hence are called *commandataires* or *commendataires*, or partners in commandite ; and who are liable only to the loss of the actual capital they have advanced. The bus. is carried on by the original firm independently of the persons so contributing cap. The Joint-Stock Cos. Act, 1867, enabled limited partnerships of an analogous character to be estab. in the U.K.

COMMENCEMENT OF INSURANCE RISKS.—Questions not unfrequently arise regarding the actual commencement of risk—that is to say, the moment upon which the insurer steps into the position of the insured, regarding the contingency insured against. The practice varies with the varying nature of ins. contracts. Speaking generally, it *cannot* commence until the office, or the underwriter, has done some act by way of assent, capable of proof. In *Marine* ins., the “initialling the slip” is such an act. In *Fire* ins. the issuing of a “provisional receipt” by the co. or its duly authorized agent suffices. In *Accident* ins., *Glass* ins., *Hail* ins., and *Carriage* ins. the same. In each of these cases it is usual, if not absolutely essential, that a deposit on account of prem. be paid by the ins. A “consideration” is thus provided. In *Life* ins., in *Fidelity* ins., in *Cattle* ins. provisional receipts do not usually apply. The agent cannot commit the co., otherwise than by the express authority of the co., after proper forms shall have been filled up, examinations made, and an “acceptance” issued from the chief office. Even then the co. will not be upon the risk until *the prem. shall be actually paid*. The reasons for these distinctions will be obvious to our readers. In *Marine* ins. special considerations arise, which we shall notice under **COMMENCEMENT OF VOYAGE**. In *Fire* ins. a survey is generally necessary, in many classes of risks absolutely indispensable, for the safety of the office. The “provisional receipt” is therefore so shaped that if the risk be not regarded as satisfactory, the return of the prem. (less a proportionate deduction for the time the co. has been upon the risk, if originally so stipulated) by the co. terminates the transaction. The same regulations apply to *Glass* ins. and to *Carriage* ins. In *Life* ins. the acceptance or rejectance of the risk depends upon medical examination, and a consideration of “friends’ reports,” etc. In *Fidelity* ins. the acceptance or otherwise depends upon the combined result of a series of inquiries. In *Cattle* ins. the inspector must issue his certificate of health and value. Other branches of ins. have to be dealt with according to their peculiar requirements. In every case the contract can only be finally completed by the issue of a duly stamped pol. ; and all previous dealings will be held to be subject to the usual conditions of such pol., plus any special negotiations or requirements in the particular case. [DURATION OF RISK.]

COMMENCEMENT OF VOYAGE, OR RISK.—In marine ins. the question of *when* the voyage, or the risk, actually commences or commenced, has often become a point of much importance. The matter is further complicated by the fact that the ins. on the *ship* may commence at one period ; the ins. on the *cargo* at another ; and the ins. of the *freight* [*i.e.* rent or earnings of the ship] at a third. We will treat these under their separate heads.

1. *Ship*.—It seems to be clearly decided now that the risk on the ship commences *at* the port of departure, from the time of the ins. being effected, if the ship be there ; if not there, then as soon as she arrives there, in view of commencing her insured voyage. [AT AND FROM.] It is thus seen to be of the highest importance to specify the place at which the risk commences, as also that at which it terminates.

2. *Cargo*.—The words in the ordinary form of marine pol. are, “Beginning the adventure upon the said goods and merchandizes from the loading thereof aboard the said ship.” Mr. M’Arthur has pointed out that the protection afforded by this clause is incomplete, when, as is frequently the case, vessels lie at a distance from the shore, and the goods are conveyed to them in boats, lighters, and other craft which are liable to be wrecked or damaged on the passage. The pol., he considers, should contain the words “including risk of craft,” in order that the goods may be covered from the moment they leave *terra firma*. Some cos. have remodelled the clause as follows : “The ins. aforesaid shall commence from the time when the goods and merchandizes shall be laden on board the said ship, or vessel, craft or boat, as above.”

It is generally understood as implied that the port of departure [of the ship] and the port of loading are identical [unless otherwise expressed] ; but in the case of *Carr v. Montefiore*, decided in the Exchequer Chamber, May, 1864, it was held that where the cargo had been laden at a previous port to that named in the pol. of ins. of cargo, but the ship had called at the port specified, and by reason of an accident had unladed a part and reladed her cargo, that was a sufficient compliance with the requirements of the pol.

In the case of *Jones v. Neptune Marine Ins. Co.*, before the Courts in 1872, where the question of freight was involved, some important points regarding cargo were raised. The case will be given under our next head.

3. *Freight*.—Freight is of two kinds, viz. : 1. Bill of lading freight, which may generally be considered as coincident with the risk on goods. 2. Chartered freight, which commences immediately the ship commences the voyage on which the freight is ultimately to be earned. These will be discussed in detail under **FREIGHT**. For our present purposes

the case of *Jones v. Neptune Marine Ins. Co.*, decided in the Exchequer Chamber in 1872, will afford sufficient insight into the points usually involved. In this case the ship was chartered for a voyage from Melbourne to Baker's Island, an inaccessible isle in the Pacific, where there is nothing but guano, which the vessel was to carry. The freight was ins. from Melbourne to Baker's Island, and during her stay there; and the question was, what portion of the risk was undertaken? The pol. was in a new form, entirely different from the common form, and the question was as to its construction. In the ordinary form of ins. of goods on a voyage it ran thus: "Beginning from the loading thereof on board the ship." But nothing was said as to the time at which the risk was to begin in case of ins. of freight. So that in the common case the ins. would exist as to the ship during the voyage, but did not commence as to the goods until they were loaded on board. In the present case the ins. was on "freight, payable in respect of the voyage, from Baker's Island to the port of call or discharge in the U.K.; ins. on freight beginning from the loading of the vessel, and ending when the vessel was moored." The question was what these words meant. In point of fact, the vessel was lost on the rocky shores of the island, when the whole of the cargo was ready to be put on board, but when only a part of it had been actually loaded. Three different views were put—the one, that of the plaintiff—that, as a part of the guano was loaded, the pol. had taken effect, and the whole freight was recoverable; secondly, that at all events he was entitled to recover *pro rata* for as much as had been actually put on board; the third view—that of the underwriters—was that, as the whole of the guano had not been loaded, no part of the ins. was recoverable; and this was the view taken by the Court.

The different reasoning of the Judges, all tending to the same result, was very instructive:

Mr. Justice Blackburn declared his construction of the pol. to be that the words in question, "to begin from the loading," did not extend the risk, but rather limited it, and required that the whole cargo should be loaded before the risk began at all. His conclusion was, that as the whole cargo had not been loaded when the loss occurred, the underwriters were not liable at all.

Mr. Justice Mellor concurred in the conclusion, but for an opposite reason—that the words extended the risk, and that they must be read "from the loading of the vessel at Baker's Island to the port of call or discharge." This led him to the same result, though the reasoning was founded on an opposite view of the construction of the contract.

Mr. Justice Lush also agreed in the conclusion, though for a different reason. In his view, he said, the words were merely descriptive of the voyage, and were not intended to define the risk. The voyage was "from Baker's Island"—i.e. from sailing. Then the words, "Beginning from the loading," etc., were to be read as qualifying the inference to be drawn from those words, and they made the underwriters liable only from the time when the whole of the cargo was loaded, and not at all if the whole was not loaded.

The verdict was therefore entered for the defendant Co.

Molloy [*De Jure Maritimi et Navali*] said, 1701, "If a ship be ins. from the port of Lond. to Cadiz, and before the ship breaks ground, takes fire and is burnt, the assurers in such case shall not answer: for the adventure began not till the ship was *gone* from the port of Lond. But if the words had been, *at and from* the port of Lond, then they would—upon such a misfortune—have been made liable."

The Ins. Ordin. of *Stockholm*, 1750, says:—"Where the ins. for the outward-bound voyage of a ship, and that for its return, are underwritten by two different persons, the risk and obligation of the latter commences from the day and hour when the master begins to take in ballast or goods, though part of the former cargo be still remaining on board."

Valin, in his famous *Commentary* (1760), says:—"In case the voyage be commenced, and the ship a little while after remains in port, the assured cannot break up the voyage, or unload the goods, to the effect of annulling the ins.; because the insurer hath begun to run a *risque*; in like manner as *freight* is entirely gained, when the freighter unloads the goods during the voyage."

The subject is treated of fully in all the leading works on maritime ins. law.

COMMERCE.—The intercourse of nations in each other's produce and manufactures, in which the superfluities of one are given for those of another, and then re-exchanged with other nations for mutual wants. There is a distinction between commerce and trade; the former relates to our dealings with foreign nations, colonies, etc., the latter to mutual dealings at home. The affairs of commerce are regulated by the Law Merchant, *Lex Mercatoria*, or Commercial Law.—M'Culloch's *Comm. Dict.*

The growth of commerce is intimately associated with the development of ins. in its various branches. It may be said that to merchants who traded in foreign lands, MARINE INS. became at a very early period a necessity. The development of this necessity will be traced in some detail in our hist. of MARINE INS. The pirates who infested the tracks of maritime commerce led to the masters of vessels seeking first ins. against CAPTIVITY, and next ins. of their LIVES. The stores of commerce accumulated upon land led to the necessity of protection by means of FIRE INS. Many, nay most, of the other branches of ins. now practised have arisen more or less out of the development or necessities of commerce. These facts are so obvious that we shall not attempt to dwell upon them under this head.

Dr. Price, in the Supplement to the 4th ed. of his famous *Observations*, pub. 1783, says : —“ A flourishing commerce, though favourable to pop. in some respects, is, I think, on the whole, extremely unfavourable, and while it flatters may be destroying ; particularly by increasing luxury, the worst enemy of pop. as well of public virtue ; and by calling off too many persons from agriculture to unhealthy trades and sea service.”

Dr. Price is not the only writer who has enunciated such views ; but on the whole they have, we think, proved fallacious.

COMMERCIAL ACCIDENT INS. CO., LIM., founded in 1870, with an authorized cap. of £100,000, in shares of £1. The prospectus said :

There is but one assu. co. in England that has always strictly confined itself to accident assu. That Co. has for some years past paid to its shareholders upwards of 40 p.c. p.a. in div. and bonus.

The present Co. is by its art. of asso. lim. to accident assu.

It is proposed to give to the assured who have not made a claim upon their pol. during each year a parti. in the profits of the So., in the shape of a reduction of prems. for the ensuing year, thus popularizing accident assu. in a way which has been found to work extremely well in L. assu.

Through the influence and connexion of the Directors and Man., aided by the co-operation of several of the existing L. and F. cos., a large agency staff has already been secured.

A special department for travellers, warehousemen, and clerks has been formed under the patronage of several large firms.

Again :

Ins. against accident, or the result of accident, is one of the wisest provisions that can be made, especially by those who rely on their bodily activity for the means of supplying their household wants.

It is of great moment to those whose income depends upon their being able to fulfil certain duties, and to whom even a few days' confinement to bed or couch is a serious financial matter, that they should be able to provide against the contingency, and provide against it on terms as little onerous as possible.

Mr. R. Dolphin Wood, one of the founders of the Co., became its Man. After transacting a limited bus., its pol. and connexions were trans. to the *Ocean, Travellers, etc.*, in 1872.

COMMERCIAL CASUALTY MUT. ASSU. AND INDEMNITY SO.—This Asso. was projected in or about 1845 by Mr. R. Thompson Jopling. It was to be based on the mutual principle, with a Guar. Fund of £100,000. The profits were to be divided every three years among the insured ; and a benevolent fund was to be established for the benefit of the subs. and their families, “ to be applied under peculiar circumstances, and in a manner to be determined hereafter.” The details of the scheme will be given fully in our art. **COMMERCIAL CREDIT INS.** ; and we need only say of it here that it merits most careful attention, as well from the novelties of its features, as from its comprehensiveness of detail. The Co. never got beyond prov. regis.

END OF VOL. I.

